Trains

July 1944

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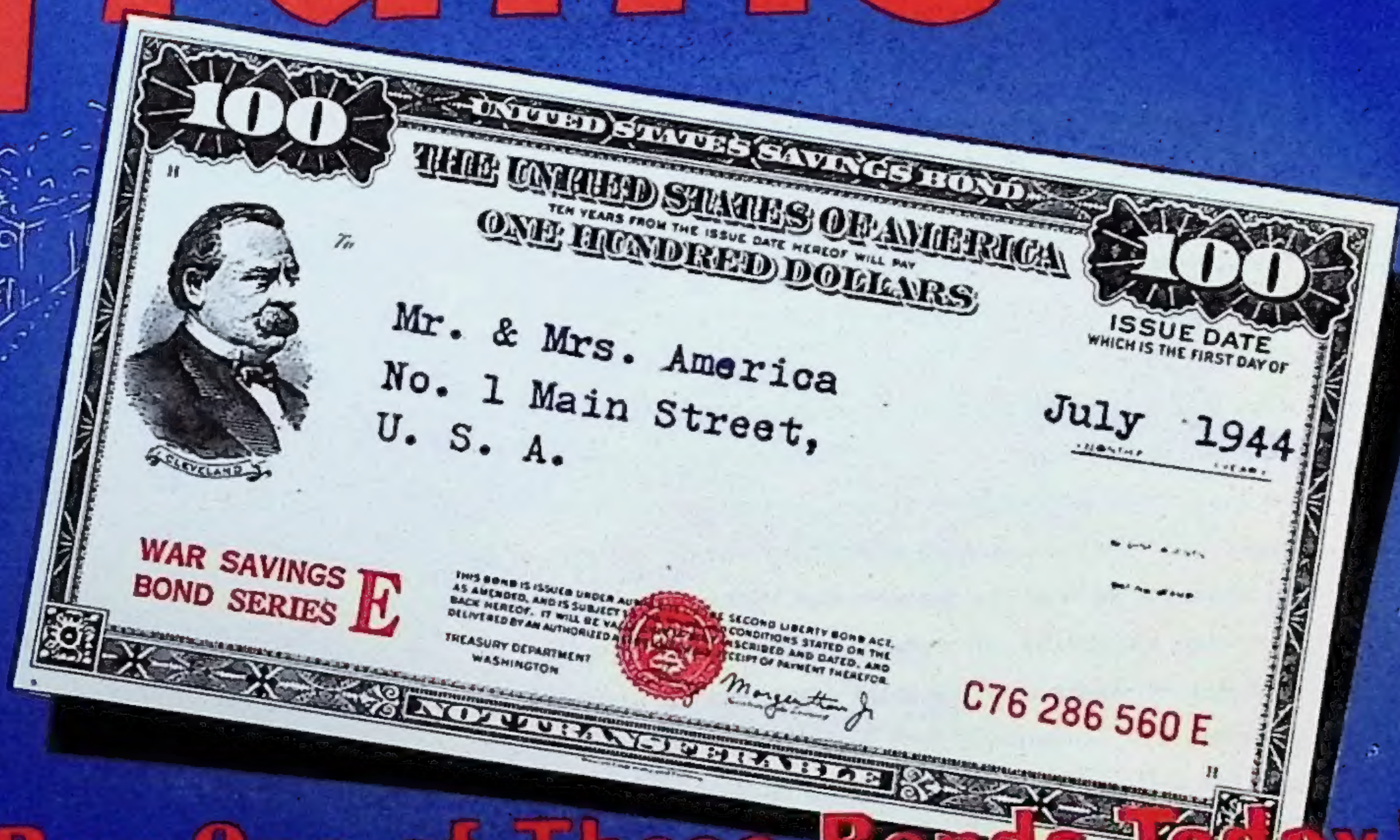

Buy One of These Bonds Today!

In this issue:

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- Peoria Gateway
- Herr Goebbels Was Wrong
- Texas Electric
- Radio on the Railroad

THROUGH THE DARKEST HOUR

The railroads are part and parcel of the vital service of supply on which fighting men depend. They know first-hand the darkness of the hour before the dawn. • They follow the progress of the war by the nature and urgency of the burdens they carry—burdens that never lighten through the whole 24 hours of the day. • So through sunshine and shadow, railroad men serve the needs of war. Short on help, short on time, they know the value of every hour and every car. They know that a fighting nation counts on them to deliver the goods that Victory is made of—and doggedly, devotedly, they are sticking to that job. • Some day the dark hour will be behind us. Then our nation will look back on the courage and the will with which we faced it and judge our fiber as a people. • The railroads are working now so that when that day dawns they can, in clear knowledge of a job faithfully discharged, look forward with confidence to finer things to come.

BUY MORE WAR BONDS

ASSOCIATION OF
AMERICAN RAILROADS
ALL UNITED FOR VICTORY

Indians on our Warpath

When the first transcontinental railroad tracks were under construction Indian raiders were a constant threat to workmen on the right of way.

But descendants of these first Americans today make common cause with all Americans. Indians are serving in the armed forces, buying war bonds —and helping to keep the war trains rolling!

As our locomotives come whistling around Kintner curve east of Yuma—and at other points along Southern Pacific lines in Arizona—bands of husky Indian braves wave greetings from beside the tracks.

Navajos, Hopis, Pimas and Apaches are working on our right of way—the railroad's warpath. These patriotic Redmen came from the reservations and from scattered hogans in answer to our wartime call for extra manpower.

Garbed in purple and scarlet shirts, wearing bright headbands, the Indians form America's most colorful and unique section gangs. Under the brilliant Arizona desert sky they swing picks and tamp ballast with the grace and endurance for which the Indian is famed.

During this wartime emergency Americans of varied backgrounds and skills have rallied to the railroad's aid. People know the trains must run, and they see that we are handicapped by shortage of help—that we badly need more workers, both men and women. In many communities all along our 15,000 miles of line, Southern Pacific is the main war industry . . . often the *only* local industry directly engaged in war work.

So throughout the West and South, thousands who never did railroad work before have come to help out in our offices and machine shops, on our trains and in our yards. Women have stepped into hundreds of S.P. jobs formerly handled by men. Without this fine cooperation from the folks along our lines we could hardly hope to carry our war load successfully.

From New Orleans in the deep South, from the Pacific Northwest . . . from Chicago and the Midwest . . . S.P. lines converge at West Coast ports. To these "take off" points we haul a big share of all the troops and supplies needed for the war against Japan.

No railroad in the nation is more strategically situated to help win the war than our own.

And in the postwar world, when good railroad service will also be vital, we will be a stronger railroad. Stronger in facilities, and able to provide better transportation. *Stronger, too, in friendships gained through public understanding of our problems now.*

S·P

The friendly Southern Pacific

One of America's railroads—ALL united for Victory!

Trains

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American railroads produce the world's most efficient common-carrier mass transportation and are the foundation of our country's industrial productivity.

THIRTY years ago many professors of electric railway engineering told their classes that in another quarter century the steam locomotive would be obsolete for main-line service, replaced by the electric. Things didn't work out quite that way, and yet electrification has been progressing in another way that the professors never thought of 30 years ago. For the Diesel-electric locomotive is, after all, simply an electric locomotive which carries its own power plant rather than drawing from a central power plant through trolley wire or third rail.

And yet the older style of electrification, even with its tremendous investment in power-distribution facilities, holds much promise for the future. Perhaps the Diesel will take over in some special situations where electrification was installed merely to meet specific operating problems. Diesels, for instance, may enable the Boston & Maine to do away with the short stretch of electrification through the Hoosac Tunnel. But in many another situation, central-station electrification is being very seriously studied as a method of improved operation which will pay for the increased investment.

From the standpoint of long-term national-resource planning, one essential difference between central-station and Diesel electrification is that the Diesel locomotive burns fuel oil, an irreplacable national resource, while the central station may use water power, which is continually replaced.

In road operation, straight electrification has another and practical advantage. The electric motor can stand considerable overload for short periods of time. With the Diesel power plant in the locomotive, the output is limited to the generating capacity, but with straight electrification the locomotive can draw on the central station for more power when needed, and this makes possible even quicker acceleration and better performance on grades which are not so long that the overload overheats the driving motors.

But the really big distinction between Diesel electrification and central-station electrification is that on the Diesel the power-plant capacity equals motor capacity, while with straight electrification the power-plant capacity need be only enough to meet the maximum requirements of locomotives on the road at any one time. With a heavy-traffic line the power requirements average out. While one locomotive is pulling up a heavy grade, another is sure to be standing in a station. While one is accelerating, another is running downhill. For every locomotive on the road another is perhaps standing in a terminal. What this means is best shown by the figures on the Pennsylvania electrification, where the power-plant capacity is about 30 per cent of the total rated horsepower of motors on locomotives and multiple-unit cars. This economy of power plant, together with the greater economy of generating electricity in large central stations, makes the investment in substations and trolley worth while.

In any particular railroad operation all this must be reduced to the dollars and cents of the profit and loss statement. The answer is not always the same. But very definitely we still have three principal competitors in the motive-power development of the future: the steam locomotive [see page 2, April TRAINS], the Diesel-electric, and the straight electric.

Telegraph Centennial

The telegraph, which has played such a large part in railroad operation, was 100 years old May 24, and two railroad presidents helped celebrate the occasion. Ernest E. Norris, president of the Southern, sent the message "What hath God wrought" from Washington on the original instrument used in 1844 by Samuel Morse, the inventor, and it was received at Mount Clare station, Baltimore, by R. B. White, president of the Baltimore & Ohio. Mount Clare is near the site of the building where the first message was received 100 years ago. Mr. White, who used to be president of Western Union, then retransmitted the message to Washington, completing the process by which electrical communication was originally demonstrated to a doubtful Congress.

Travel Rationing?

The O. D. T. is determined, because of the manpower needed to administer such a system, to avoid travel rationing except as a last resort, but Director Johnson recently pointed out that railroad passenger facilities remain overtaxed and a reduction of even 10 per cent in travel would provide substantial relief. Extreme shortage of accommodations and wholesale last-minute withdrawal of space is almost sure to come in the New England and Eastern Seaboard areas at any time now, and would-be vacationists are urged to stay home for fear of a repetition of last winter's sorry spectacle in Florida.

North Western Reorganized

The Chicago & North Western became the first large western railroad to emerge from receivership when the reorganized company took over the property on June 1. It was the first major railroad reorganization since that of the Erie a little over two years ago. The scaling-down of debt in the North Western reorganization is similar to but even more drastic than in other recent cases. Unusual feature is the creation of a voting trust agreement by which five trustees selected by the bondholders and stockholders of the new company, who were creditors of the old company, vote the stock of the new company for either 10 years or until dividends have been paid on preferred stock for three consecutive years. By thus controlling the management of the new company, the creditors and owners assure against speculative ownership of

stock at least until the reorganized company has had a fair chance to prove the worth of the plan.

In recent years, 36 Class 1 railroads have been or are being reorganized. In 1940 roads in reorganization totaled 86,000 miles, or about 37 per cent of the country's mileage, and had revenues of about 1 billion 300 million dollars, or about one-third of the country's total. Roads now reorganized include the Akron, Canton & Youngstown, Ann Arbor, C&EI, C&NW, Chicago Great Western, Erie, Gulf, Mobile & Ohio, Lehigh Valley, M&StL, Norfolk Southern, Spokane International, and Wabash. The B&O, D&H, Colorado & Southern, and Lehigh reduced their fixed charges without going through receivership by using the McLaughlin Act. The B&M reduced its fixed charges in a purely voluntary agreement with creditors.

Both the Western Pacific and the Soo Line will be reorganized within a few months, as all that remains is paper work. The Rio Grande, Cotton Belt, and New Haven, which are approved by the I. C. C. and courts and now being voted on by creditors, should come next, probably late next year. After them will come the Monon, Milwaukee, and Rock Island, which have I. C. C. but not court approval. According to Patrick B. McGinnis, specialist in railroad reorganization securities, the only thing which can keep these last two groups of reorganizations from being finished in 1945 or 1946 would be the passage by Congress of the Hobbs bill, currently reported to the floor of the House, which provides that new capitalization of railroads after reorganization may not be lower than either the value of the physical property or the old capitalization, whichever is lower, and that the courts must make an independent review of reorganization plans instead of accepting I. C. C. reviews.

Odds and Ends

The four passenger Diesels (three-unit jobs, by the way) which the NYC has on order are not slated especially for the *Century* as rumored. They will be used on various runs for quite some time before being permanently assigned, thus accumulating performance data on different parts of the system. . . . The New Haven is putting coach porters on principal trains. . . . Because of a peculiar vibration which used to loosen the saddle bolts, the B&O is rebuilding all its President-class Pacifics with cast-steel integral engine beds which incorporate cylinders and frames in one large casting. External appearance, especially of the front end, is much different. . . . The Milwaukee Road's afternoon *Hiawathas* between Chicago and St. Paul-Minneapolis are nine years old and in that time have carried 3,275,000 passengers. . . . June 16 was the tenth anniversary of the opening of the Rio Grande Dotsero Cutoff, which created a new transcontinental route via the Moffat Tunnel. . . . Pennsylvania seems to be concentrating more electric locomotives around the nation's capital. Heretofore, it was not uncommon to see standard Pacifics handling some of the Washington-Baltimore trains. No doubt the steamers had trouble keeping pace with the sharp timings required on this line, and this has resulted in assigning more of the famous GG-1's.

Plywood Box Cars

Box cars of steel-frame and plywood-sheathed construction are going into service on the Great Northern, part of an order for 1000 being built in the company's St. Cloud shops. These new cars are equipped with special high-speed trucks, non-harmonic springs, wrought-steel wheels, and steel ends and roofs. They are painted bright orange to distinguish them from standard box cars, but this new color will not become standard for all GN freight cars. A special train of 100 of these new cars pulled by a new 5400-horsepower Diesel locomotive made an impressive westbound train on the Big G recently.

Troop-Train Operation

On some railroads, all troop trains, whether mixed or not, are operated with cabooses. Other lines operate troop trains at first-class speeds, 75 and 80 miles per hour. Almost all roads are using freight engines on many of these trains, due to the shortage of power. And some troop trains run as high as 18 and 20 cars.

Dispatcher's Worries

The dispatcher has a lot more to worry about now than just moving trains. This was brought home recently when I was on the Pennsy's *Juniata*, some 26 minutes late at North Philadelphia but still on the New York Division ahead of the 5 o'clock *Clocker* for New York. I thought we'd go right through to make up some time, but we dragged along while the *Clocker* passed us on the outside track and preceded us into Trenton. Come to find out, the dispatcher had to put the *Clocker* into Trenton first, for the few empty seats on our long-distance train would have fallen far short of absorbing the wartime rush-hour crowd waiting on the Trenton platforms.

A. C. Kalmbach.

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Herr Goebbels Was Wrong

The American railroads did the impossible by successfully carrying fabulous wartime traffic

BY ELMER T. HOWSON*

SHORTLY after Pearl Harbor, Paul Goebbels, Germany's minister of propaganda, directed attention to the fact that the American railways were entering the present war with 10,000 fewer locomotives and 500,000 fewer freight cars than they had at the beginning of the First World War and drew the not-illogical conclusion that such a shortage in facilities would prove an insuperable handicap to our nation's war effort. Transportation, and particularly rail transportation, he declared, would prove the Achilles' heel of America's war effort.

And Dr. Goebbels was not alone in his dire forebodings, for there were those among our own numbers who gave expression to similar views. One such authority stated in the fall of 1941 that "this country is now teetering on the edge of a transportation shortage. We face a critical situation in all modes of transport—a railroad car shortage of as high as 40,000 cars a week may develop in October." Another spokesman predicted a shortage of 80,000 cars and stated that the railroads would need 370,000 new cars by the fall of 1942. Still another "authority" placed the anticipated shortage at 49,978 cars; why he did not add 22 more cars to bring the total to 50,000 is unexplained.

So much for Dr. Goebbels' prediction and for others of similar vein. What of their accuracy?

In 1918, the peak traffic year of World War I, the railways sagged under a load of 405 billion ton-miles of freight traffic. In 1929, the year of heaviest traffic during the boom period of the '20's, the total reached 447 billion ton-miles. Yet, in 1941, the railroads produced 475 billion ton-miles; in 1942 they raised this to 638 billion ton-miles and last year they produced 725 billion ton-miles. In other words, they produced 80 per cent more freight service last year than in 1918; in fact, they produced more than in the years 1918 and 1939 combined. And they did this with 500,000 fewer freight cars and 20,000 fewer locomotives than they had in 1918. In this spectacular performance they proved Dr. Goebbels was wrong in his forecast with regard to the railways of America just as realistically as our men in uniform will prove fallacious his more recent statements about the outcome of the war.

In passenger traffic, their performance has been even more spectacular. In 1918 they produced less than 43 billion passenger-miles; in 1920 this figure rose to a predepression peak of 46 billion. Yet in 1942, the output rose to the new high record of 54 billion passenger-miles and last year it approximated the prodigious figure of 85 billion, nearly four times that of as recent a year as 1939 and approximately twice that of 1918, the peak year of the previous war. And the railroads did this with 16,000 fewer passenger cars than they had in 1918.

This spectacular record is being achieved by the most outstanding display of efficiency ever witnessed in transportation. To mention only a few indices, in 1923 the railways set for themselves a goal of 30 miles per freight car per day; they reached it in only one month of that year and in only one month of the following year. Yet in 1943 they averaged 52.3 miles per car per day. Similarly, the average load carried per car rose from 27.9 tons in 1923 to 33.5 tons in 1943.

The average gross tons per freight train crossed 1100 for the first time in 1943 to reach the record figure of 1116, an increase of 403 tons over 1923. Prior to 1939 this figure never exceeded 804 tons. As a result of this increased train loading and of the higher speed at which these trains were operated, gross ton-miles per train-hour exceeded 36,000, or more than twice the 16,764 total for 1923.

Similarly, the average number of passengers carried per train-mile increased from 37.6 in 1939 and 60.3 in 1940 to 186.2 in 1943!

This remarkable contribution to the nation's war effort has been made at a time when other transportation agencies—on the water, on the highways and in the air—have been forced for one reason or another to curtail their activities. In fact, the tremendous load that has been thrust on the railways has resulted in part from the transfer to them of burdens heretofore carried by other agencies. The suspension of coastwise and intercoastal shipping, the diversion of oil tankers from coastwise to other service and limitations on highway and air transport have all increased the railroad load. This is shown by the fact that while, in normal times, the railways handle approximately 60 per cent of the

* From an address before the Pacific Railway Club. Mr. Howson is vice-president of Simmons-Boardman Publishing Corporation, western editor of *Railway Age*, and editor of *Railway Engineering and Maintenance*.

U. S. Army Signal

total commercial traffic of the country, this ratio has now risen to 70 per cent.

More than four-fifths of the wartime increase in the nation's freight traffic has fallen on the railways. They are moving more than 93 per cent of all the army's freight and express and over 80 per cent of the armed personnel. During the first 20 months of the present war, the railways transported 2½ times as many troops in special trains and cars as in the 19 months of World War I—without counting the thousands upon thousands of service men and women who have traveled individually or on furlough. The magnitude of this accomplishment is realized only when the highly mechanized character of this war is appreciated, for it now requires as many as 65 trains and approximately 1350 freight and passenger cars to transport a single division.

This, in brief, is the record the railways have made to date—a contribution to the nation's war effort that is not excelled by any other industry of comparable magnitude. And they are not yet through, for they still have not reached their ultimate capacity. In fact, to repeat a recent statement of a vice-president of the Association of American Railroads, the railways do not know what their real capacity is. Probably 1944 will reveal this figure, for recent estimates point to further increases of 6 per cent in ton-miles and 15 per cent in passenger-miles in 1944.

How has this record been made possible? Several factors have contributed. Near the top is the expenditure of more than eight billion dollars since the last war for additions and betterments to railroad properties, to strengthen roadway and structures, to add new modern cars and locomotives and to eliminate bottlenecks in the wide variety of signaling and other facilities that go to make up a modern railroad. Means have also been developed for coordinating the effort of individual railways, to a degree found in few other industries, into a unified program for all in order to utilize to the full the capacity of each unit. And to this should be added a degree of shipper cooperation that is unique in industry, a cooperation that cannot be over-emphasized because of the importance of its contribution to the present performance of the railways.

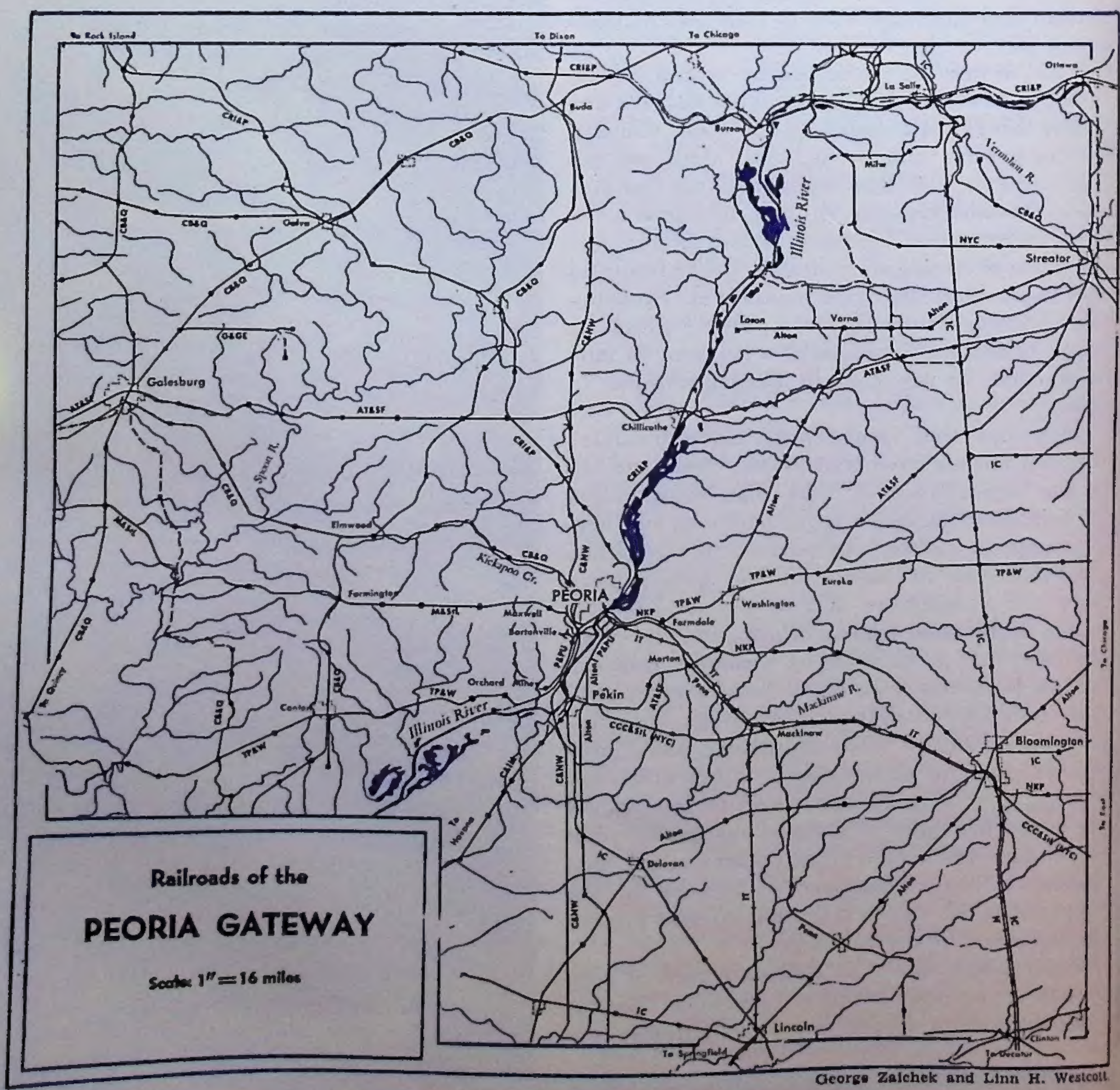
Such is the record of 1943—a record of contribution to the nation's objectives that is unsurpassed by that of any other industry.

Peoria G

BY DAVE LEW

All photos not otherwise accredited, Dave Lewis, 509 Kellogg, Peoria, Ill.

C&NW double-header starting up hill near Peoria. Burlington track in background.



George Zaichek and Linn H. Westcott

ateway

With 14 railroads and large interchange traffic, this central Illinois manufacturing city has rail traffic larger than population indicates

PEORIA, Ill., is one of the outstanding railroad freight gateways in the country. As a primary point of interchange between tariff regions, it naturally cannot be ranked with St. Louis or Chicago, but its daily volume of freight interchange is tremendous for a city of only 105,000 population. Let us look at this railroad center from a rail's-eye viewpoint.

A bit northwest of the geographic center of Illinois, Peoria is only 155 miles from Chicago, in the heart of the vast coal field. It is on the water route from the Great Lakes to the Gulf and is well within the famed corn belt. The eastern boundary of the city is Lake Peoria, an expansion of the Illinois River. Rising from 200 to 400 feet and setting 200 to 5000 feet back from the river is a series of bluffs. On this strip of rolling plateau is built the industrial and commercial area of the city. Trackage of 14 railroads forms a network between some 500 industrial plants on this eight-mile-long strip.

What type of railroading do you like? You can have your choice, from the mile-a-minute *Rockets* of the Rock Island Lines to the Buda-Peoria mixed train of the Burlington, if you like passenger business. Or, if you want freight action (and the greater percentage of the gateway business is freight), there is a constant parade of long ones and short ones, with everything in between. What about some of those 14 railroads? Let us start with the smallest one, the Peoria & Pekin Union.

It is largely the P&PU which makes Peoria an efficient gateway, or interchange point, between eastern and midwestern roads. The P&PU is a terminal railroad, handles the switching and servicing for most of the roads in the area, and is owned by several of the roads it serves. It has a number of sidings in Peoria, owns the Union Depot used by passenger trains of the Burlington, Nickel Plate and New York Central, and has a fine double-track bridge across the river to East Peoria, where its main yards are located.

Serviced in the P&PU's roundhouse are engines of the Pennsy, Alton Railroad, Illinois Central, Chicago & Illinois Midland, New York Central, and the P&PU's own switchers. All trains of the roads using P&PU facilities are made up and broken up in the yards in East Peoria, the engines crossing the bridge to and from the roundhouse.

The main stem of the P&PU is double track to Pekin, eight miles down the river on the east bank. All main line is under centralized traffic control, and signal indications control all movements. Not many P&PU freights use this main drag, but the C&IM, NYC, Alton and IC keep it busy.

Motive power on this small but mighty switching road is typical. Six- and eight-coupled

The map shows how Peoria fits into the railroad picture with roads radiating in all directions. The city's importance as a gateway stems from the fact that many of these roads terminate in the city rather than run through. At right is the same C&NW double-header shown in the other photo, climbing out of the Illinois River Valley north of Peoria.

steam switchers are standard along with four Diesels, one of which is unusual in that it has five Caterpillar Diesel motors, four furnishing power and the fifth generating electricity and running pumps.

From the main line of the smallest road in this area, let's go to a small branch of the largest system, the Pennsylvania. This freight-only branch line runs southeast to Decatur and on to Terre Haute, Ind., where it joins one of the main lines. Traffic is not heavy. Pennsy trains come into the East Peoria yards of the P&PU and its engines use the P&PU roundhouse. Track is shared with the Nickel Plate from East Peoria to Farmdale, about five miles. South of this junction it climbs a big hill to Morton. Trains are small and the standard 2-8-0's manage to drag them up without helpers. It is a typical branch, usually running two trains a day.

The Nickel Plate Road is similar in many ways to the Pennsy. Besides sharing track from Farmdale to East Peoria, they both use P&PU yards and roundhouse and both come in from the east. The similarity ends there. The Nickel Plate has a passenger train in and out and has good freight business on this branch. The passenger train carries two cars: a combination mail-baggage and a coach. It is usually pulled by a fast-stepping Ten-Wheeler, No. 157. Mikados of the 600 series handle the freight trains and do not need helpers even on the long, tough hill east of Farmdale.

The Nickel Plate's war traffic is heavy and for a while, at least, it had a heavy petroleum-products movement via its Peoria line.

Nicknamed the Tipup, the Toledo, Peoria & Western (also known as the Peoria Road) is Peoria's own road and has had enough publicity as the only road under government operation to make it known to everyone in the country. Out of Peoria the TP&W operates east to Effner, Ind., and Sheldon, Ill., and west to Lomax, Ill., and Keokuk, Ia. Roundhouse, yards and offices are in East Peoria. Though the road has had only mixed passenger service for years, freight traffic is heavy. Much through freight from east and west is routed over the Tipup to save the time ordinarily lost in interchange in the congested Chicago area.

The motive power, always in tip-top shape, consists of Consolidations, Mikes and Northerns. The big Consolidations are used in both switching and road service, Tipup having no switchers. The Northerns, all numbered in the 80's, are the pride of the road. Not the heaviest nor the most powerful 4-8-4's ever built, they are, in my opinion, the best looking and best proportioned. These engines have melodious chime whistles which carry well.

The TP&W has its share of trackage agreements. On the east end it shares track with the Pekin branch of the Santa Fe from Washington to Eureka. It has its own bridge over the Illinois River, coming onto Burlington track at the Peoria end, and using Burlington track to the

Optional routes

For the benefit of those who must travel but who cannot get accommodations by their usual route, TRAINS each month will print a brief listing and survey of available routes between larger cities.

Washington and Pittsburgh:

Baltimore & Ohio—Via Cumberland, Connelsville and McKeesport. Two day trains each way and numerous night trains, of which one westbound and two eastbound carry overnight Pittsburgh-Washington sleepers.

Pennsylvania Railroad—Via Baltimore, York, Harrisburg, and Altoona. Two day trains westbound, three eastbound. Numerous night trains, of which one westbound and two eastbound carry overnight Pittsburgh-Washington sleepers.

D. W. Yungmeyer.

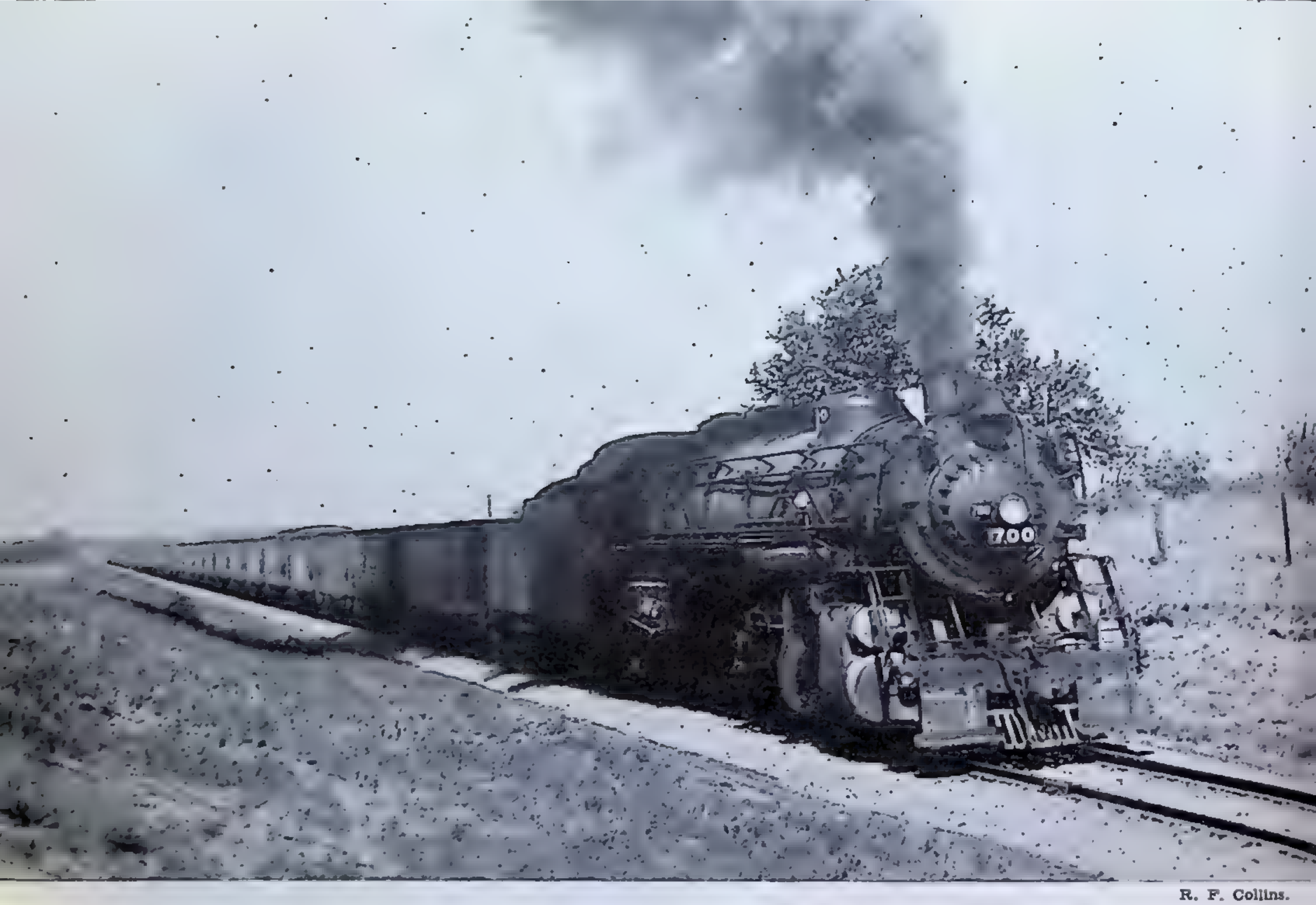
P&PU Diesel switchers are powered by Peoria-made Diesel engines. The train at Smithfield station is on the Toledo, Peoria & Western, while the passenger train about to leave Peoria is the New York Central's day train to Indianapolis, where it makes convenient connections for the East. Heralds are self-explanatory, except the Peoria Road, which is TP&W.

south end of town at Iowa Junction. There it owns a very short stretch of track to connect with Rock Island, which it uses for six miles to Hollis.

Let's go over to the Illinois Terminal System. The Traction, as it is known locally, is really not a traction line as most of them are considered. It is a Class 1 electric railroad serving central and southern Illinois. The main line from Peoria to St. Louis, Mo., offers the only through passenger service between these points, and until a few years ago had sleeper service on night trains. Three branches run from Springfield to Decatur, from Mackinaw Junction to Decatur, and from Decatur to Urbana-Champaign.

With plenty of good freight and passenger equipment, the road is ready for any business that comes. A little over a year ago it rebuilt some of the heavy freight engines numbered in the 70's, improving them in power and streamlining them. While the passenger equipment is typically interurban, the road is run as a real railroad. Trains operate on orders, carry markers and flags, and much of the main line has automatic block signals. The dispatcher at Springfield controls all of the line except into the St. Louis area, where a local dispatcher takes over.

At St. Louis the Illinois Terminal owns the McKinley Bridge. It handles much of the switching and terminal business of the St. Louis area and uses some steam engines. At the Peoria end, it owns a bridge and shops. The passenger depot is a modern building with trains coming



R. F. Collins.

Chicago & Illinois Midland is a big coal-hauler. No mistaking the road initials or the locomotive number!

in on a low level. The yards and interchange tracks are in East Peoria, while the main shops are at Decatur.

Right out of East Peoria the Traction ascends a grade which runs almost to Morton, and freight trains are usually double-headed. Most of the system is operated on its own well kept right of way; in only a few places does it operate on city streets. For real big-time electric railroading, the Illinois Terminal System with its yellow cars and streamlined freight motors is tops.

Five of the Peoria Gateway railroads come in by way of Pekin, an industrial center 10 miles downriver and part of the Greater Peoria area. The Alton, one of the few railroads which do not have a heavy grade to contend with, leaves the main line at Sherman, just north of Springfield, and goes through the east edge of Pekin, coming onto P&PU track about half way to East Peoria. No passenger service is provided. Freight engines are regular mainline Mikes carrying a small tender with a brakeman's shanty, and an auxiliary water car. Usually two trains a day run each way on this branch. P&PU facilities are used in Peoria.

Another Alton branch almost reaches Peoria. Leaving the main line at Dwight, it works west to Varna, where it again branches, one branch running to Lacon and one to Washington, only 12 miles from Peoria. The local freight comes into Washington on Tuesday, Thursday and Saturday. Years ago trains of this line went into Peoria over TP&W tracks and gave passenger service to Chicago. The line from Washington to Varna is interesting because of the many stone culverts and small stone arch bridges on it, testifying to the sound construction used years ago when it was built.

The Illinois Central operates a freight-only branch entering Peoria through Pekin and using P&PU facilities. This line is part of the Springfield Division and the cabooses are so lettered; regular mainline 2100-class Mikes are used. At Pekin the IC has a small yard and a one-stall enginehouse to service the 0-6-0 switcher stationed there. Track on a Pekin street is shared with the C&IM to get on P&PU right of way. The IC makes an easy exit from the Illinois Valley, working south and east to Decatur and Clinton.

A good P&PU customer is the New York Central. Coming onto P&PU tracks at Pekin, NYC passenger trains use the Peoria Union

Capt. Alexander Darragh.

The Illinois Terminal's streamlined 16-wheel electric locomotives pull good-sized freight trains on the Peoria - St. Louis run. This one is clearing the main line for a passenger train.

Depot. Originally Peoria & Eastern, then Big Four, the line is now the P&E Division of the New York Central, and runs east to Bloomington and on to Indianapolis, Ind. With two passenger trains in and out daily, the NYC gives good service to the east.

Motive power on this busy branch is all old P&E and Big Four. None of the engines are typical of the NYC. Pacifics pull the passenger trains, and Mikes and Mountains handle the freight. Many freights are double-headed up the heavy grade just outside Pekin. The P&PU handles switching and interchange in Peoria but at Pekin the NYC does its own work, using three road engines, usually big 4-8-4's, for switchers. A two-stall engine shed takes care of equipment there. Much of its business comes from the Pekin area, where it is still referred to as the Big Four. Trains originate in the East Peoria yards of the P&PU and fill up tonnage in Pekin.

The busy Chicago & Illinois Midland also enters the Peoria area through Pekin. The C&IM runs the scale in motive power, from 2-10-2's pulling freight to 4-4-0's pulling passengers. Until a few years ago these trim little passenger trains ran to the Union Depot in Peoria, but now they stop at Pekin at their own yellow brick depot. Some freight runs end at Pekin; most, however, go onto P&PU tracks and use P&PU yards and roundhouse in Peoria. This prosperous road reaches down into southern Illinois coal fields and much of its traffic is coal. At Havana it has a big coal dock transferring coal from railroad cars to barges.

Passenger trains regularly consist of American-type (4-4-0) locomotive No. 500, 501 or 502 with one combination mail, baggage and smoker and one coach, painted red, white and blue with "Buy War Bonds" on the sides. Any hotshot freight is run in the passenger train, quite often as many as four or five box cars and reefers. When this freight is too much for the regular engine to pull or when it is in for repairs, the passenger train is handled by a Mike.

The C&IM is well maintained, with crushed-rock roadbed and well kept engines.

The Santa Fe is one railroad into Pekin which does not continue to Peoria. Leaving the main line near Streator, the branch winds its way southwest to Pekin, sharing track with TP&W

from Washington to Eureka. Santa Fe's main line from Chicago to the West is nearest to Peoria of all main lines, having a division point at Chillicothe, 15 miles away. All through trains except the *Super Chief* stop here.

The Burlington, with its network of rails covering the Midwest, could never pass up a city like Peoria, which is served by a branch from Galesburg on the main line. The one gas-electric train in and out each day uses the Union Depot, but the Burlington has its own yards and five-stall roundhouse. It keeps a Diesel switcher and an old-style 0-6-0 busy doing transfer and industrial work. The "Q" has some of the best industrial sidings in Peoria.

Mikes of the 4900 class pull freight, and a little old Atlantic pulls the mixed train on the Buda branch, leaving Buda in the morning, entering the Peoria branch at Elmwood, then continuing to Peoria. It is due in Peoria at 12 noon and should leave at 1 o'clock. Frequently there is just time to turn the engine, unload and load express, and pull right out again. This train does the switching and local work both ways and sometimes has, Peoria-bound, as many as 15 freight cars in addition to the combination mail, express and passenger coach. Leaving, it usually has just the engine and combination car.

The Burlington follows Kickapoo Creek all the way to Elmwood. This gives a grade for miles but no really steep hill, so it is made without helpers. The "Q" branch is one of the few lines that do not have to cross the Illinois River. One of the big traffic items is coal.

The Chicago & North Western makes a big contribution to the Peoria Gateway both in traffic and interesting operation. A branch leaves the main line at Nelson, Ill., and goes almost straight south into southern Illinois coal fields. It has always been primarily a coal road, with business booming in the winter and falling off in the summer, but during the last year or two it seems to have been busy the year 'round.

The North Western really doesn't enter Peoria at all. It has large yards at the south end of the city where cars are set out and picked up, but the P&PU does all the switching. South Pekin is the division point. Big 2-8-4's pull most of the freight, but since the expansion of business more old Mikes are in service again. From Kickapoo Tower to Radnor the line has an ascent all the way. All trains are double-headed up this grade, which is about five miles long. Several overhead bridges cross the tracks near the top of the hill. From them can be seen the doubleheaders working their way—one of the most impressive sights anywhere.

At Kickapoo Tower the spur into the Peoria yards branches off and goes under the main line into Peoria. The North Western has trackage rights over the M&StL as far as the big stripmine at Middle Grove, where it obtains its own coal.

The Minneapolis & St. Louis has always been particularly interesting to me. In fact, the M&StL brought my family to Peoria. My father ran as baggage and express messenger between Peoria and Mason City, Ia., for years. His Sunday layover being Peoria, we moved here from Oskaloosa, Ia. At that time two passenger trains ran each way out of the city. Now only one gas-electric car runs in and out and the M&StL would be glad to discontinue that. When we were kids, we always spent holidays with our grandparents in Oskaloosa, Ia., and of course went back and forth on the train. To us, those 4-4-0 engines and trains of three open-platform cars were the finest equipment in the country.

At that time M&StL passenger trains used the Union Depot, later changing to the Rock Island station. Now the M&StL has a little depot of its own at the end of the track at Bartlett. The track follows Kickapoo Creek about two miles, then turns up the heavy grade to Maxwell. All trains are helped up this hill. Usually tonnage is filled here from cars that are pulled up with switch engines.

The M&StL has its own facilities in the Peoria area. The yards, engine house and depot are at the south end of Bartlett. Power units are regular M&StL stream-styled Mikes and Consolidations for road service. Usually Diesel switcher D-139 is in the yards, doing the switching and transfer work and helping trains up the hill. When the Diesel is laid up, a Mike or any handy engine is used for switching.

Peoria is one of the M&StL's important terminals, and the volume of business done here justifies the herald seen on M&StL cars, "The Peoria Gateway." The M&StL in turn has done a great deal to make Peoria a gateway by selling the Peoria routing via its lines.

The Rock Island, one of the busiest roads of the area, operates more passenger trains than any other, besides running plenty of freight. The Chicago line follows the Illinois River Valley most of the way. Joining the main line at Bureau Junction, this is a scenic ride with

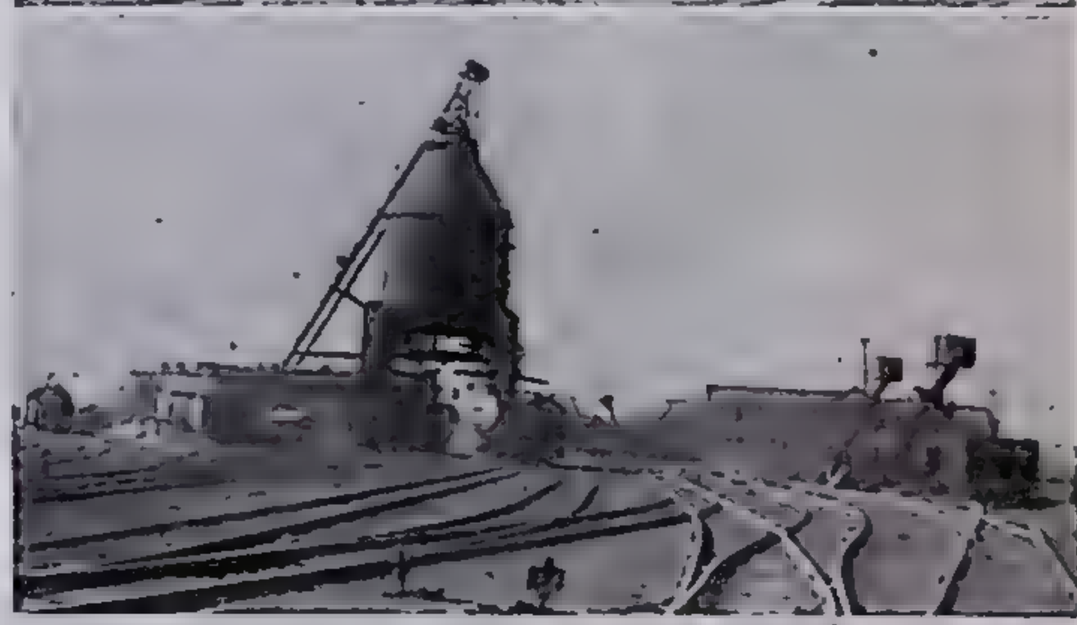
easy grades, since it follows water level. Two *Rockets* and two steam trains run each way, giving Peorians good passenger service to Chicago out of the Rock Island's own depot northeast of the Union Station. The *Rockets* are always full and reservations must be made in advance. The Peoria *Rockets* have always been among the most profitable of the Rock Island passenger trains. They run to Chicago, 160 miles, in 160 minutes over-all time. They are four-car trains but sometimes during rush seasons an extra car is added. The Rock Island has all its own facilities at Peoria—roundhouse, yards and depot.

Besides the Bureau line, the Rock Island has a freight-only line running southeast from Silvis on which, because of bad grades, trains are run southbound only. Until lately, all engines using this line carried extra tenders, but now that the water plug at Galva has been restored to service, regular tenders are ample.

Big Mikes are used for freight service and Pacifics pull the passenger trains. A Diesel switcher and a fleet of old Consolidations in the 1900 and 2000 classes handle the switching and transfer work. Side-door cabooses rebuilt from box cars are used for transfer work and on trains to Pekin and to the mines.

Years ago, the Peoria Railway Terminal was an electric interurban and steam switching road from Peoria to Pekin. It went to Pekin on the west side of the river, having its own bridge at Pekin. When this line folded, the Rock Island took it over, tore down the overhead trolley wires and gained entry into Pekin and many of the industrial sidings there, also obtaining the line into the LaMarsh Creek Mines and a big coal business. No. 101 of the PRT, an 0-6-0 switcher, is still in use. The Rock Island gets a lot of business in the Pekin area and takes whole trainloads of coal from the C&IM there.

The Peoria vicinity offers every type of railroading a fan could want. From mixed trains to streamliners, Mikados to Diesels, from switching and double-heading to long pulls with Consolidations—the Peoria Gateway has them all.



At Peoria Union Station in top photo is the Burlington's mixed train about to leave for its run over a branch to Buda. It doesn't look very mixed with its high-wheeled Atlantic and combination coach, but it picks up and switches freight along the way. Second photo is of the large enginehouse south of the Union Depot. Owned by the Peoria & Pekin Union, it is used for servicing of all engines of P&PU, Nickel Plate, Pennsylvania, New York Central, Alton, Illinois Central and Chicago & Illinois Midland. The M&StL terminal just outside of Peoria is shown from a highway viaduct. To the right is a refrigerator-car icing plant; to the left, the freight house. Passenger station is on the right side of the tracks just under the viaduct. At one time M&StL trains ran into the Union Depot, but now passenger service is secondary on this important gateway freight route. All yard work is handled by a Diesel switcher, while most road work is done by modernized and streamlined Mikados. Bottom photo shows a Pennsy train heading for East Peoria. Traffic on the Pennsylvania branch into Peoria is relatively light.

Texas Ele

System north and south of Dallas totals 174 miles

Third longest interurban route in the United States with passenger service is the Dallas-Waco line of the Texas Electric, a division of 97.2 miles, exceeded in length only by two runs of the Illinois Terminal [September 1941 Trains]. In addition to this run south of Dallas, Texas Electric also has a 76.5-mile route north to Denison, manufacturing, agricultural and railway center on the Oklahoma state line. Over these two divisions 64 passenger trains are run daily, in addition to a freight business bringing in almost as much as the passenger fares, and an express traffic handled by a subsidiary. Some trains carry railway post-offices in which mail is sorted en route.

In Dallas, Texas Electric uses the tracks of the Dallas Railway & Terminal Company. Trains

tric

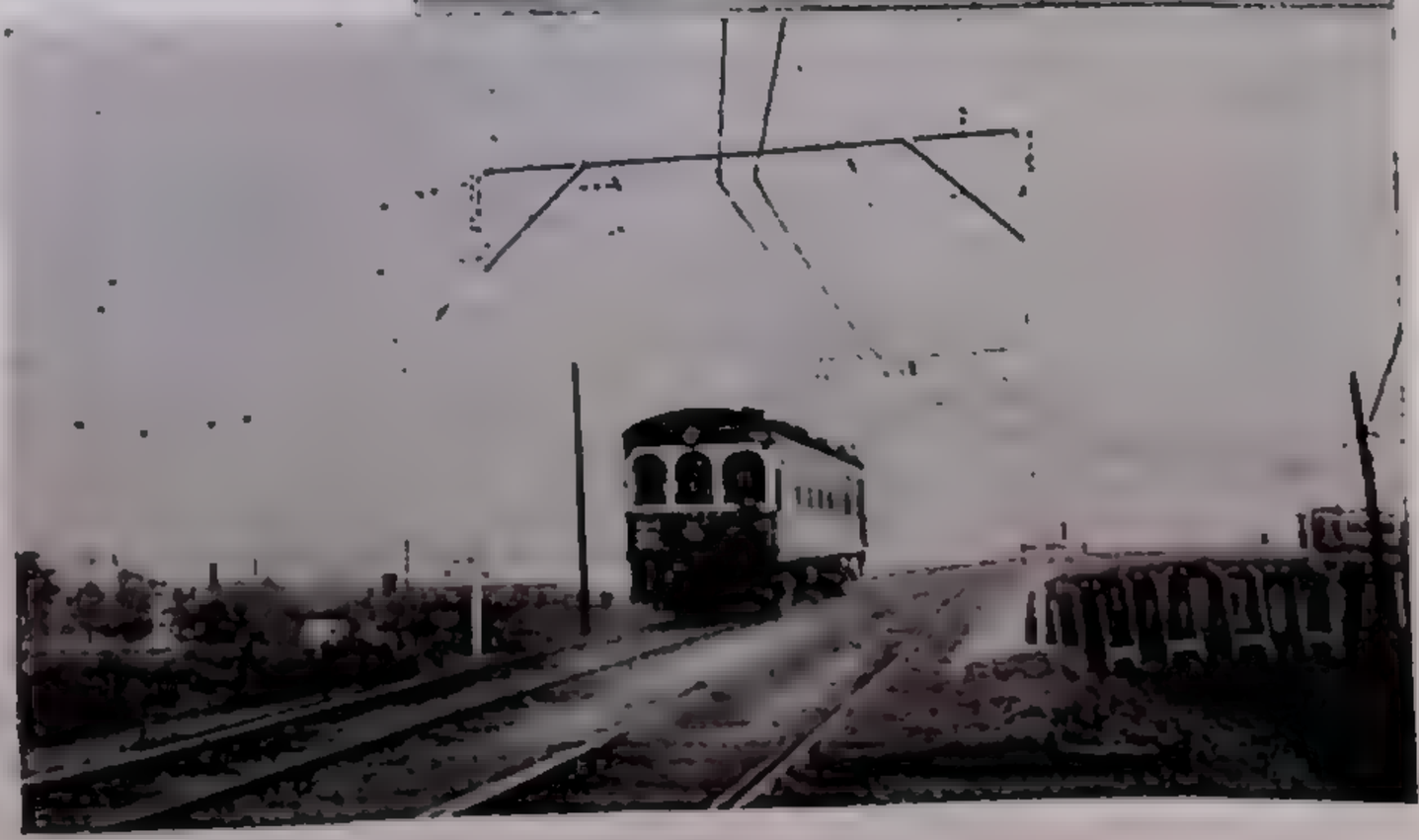
WITH PHOTOGRAPHS BY
CHARLES D. SAVAGE

from the south enter Dallas over an elaborate series of concrete viaducts, spanning the broad bed of the Trinity River and the extensive yards of various railroads. Out in the open country all line is on private right of way. The power-contact system is overhead trolley, much of it overhead catenary. The 18 substations include four portables. To operate efficiently the 174 miles of route the company uses 26 interurban passenger cars, 31 baggage and express cars, three electric locomotives, and five city streetcars, the latter in Waco local service.

The big red-and-cream cars are quite impressive, especially those which have been rebuilt with straight letterboard covering the old arch top on the windows so as to make the car look longer. (See No. 316 in photos at top, left, before and after rebuilding.) Two trolley poles are carried on each car, one with slide shoe and one with trolley wheel, the wheeled pole being reserved for emergencies.

The company dates back to the first interurban in Texas, the 10-mile Denison & Sherman Railway, built before 1908 and connected with Dallas in that year by the Texas Traction Company. The line south of Dallas, together with a 50-mile line to Corsicana (abandoned in 1941), was originally Southern Traction Company, built in 1914. In 1916 the two companies north and south of Dallas were merged to form the original Texas Electric Railway, reorganized into the present company in 1935. About a million dollars was grossed annually before the war; since the war, business has about doubled. Under the Railway Labor Act, Texas Electric is classed as a railroad, and at present its revenue would place it in the exclusive Class 1 group.

Although Texas Electric connects with eight steam roads at various points, its passenger traffic is local and interline tickets are neither honored nor sold. It does handle interline carload or merchandise freight, acting as either originating, intermediate, or destination carrier. Twice-a-day merchandise service is operated between all on-line stations.



At top, left, are views of car No. 316 both before and after a recent modernization. Car No. 310, direct side view, is typical of Texas Electric interurban equipment, and shows the one-man door arrangement. The meet is at George on the Denison line. View at right top corner shows the two trolley poles typical of the line. Lower views show a freight locomotive at the Dallas station and an interurban coming off the viaduct at Dallas.

Engineer in cab of Rio Grande Diesel freight locomotive talks by radio telephone with conductor in caboose. Three hours were saved by telephone communication on the 1140-mile trial run.

Radio on the Railroad

Systems of continuous telephone communication with moving trains and switch engines will increase operating efficiency, especially in road-freight and yard service.

BY A. C. KALMBACH

THIRTY years of progress toward a system of continuous telephone communication with moving trains seems to be reaching a climax. The first radio licenses issued by the Federal Communications Commission directly to a railroad were recently granted the Rock Island. The Burlington and the Baltimore & Ohio have joined with Bendix Aviation Corporation in extensive experiments and F. C. C. licenses have been granted. The Denver & Rio Grande Western recently tested radio communication between locomotive cab and caboose on an 1140-mile round-trip freight run. The Pennsylvania Railroad has for nearly three years been using a carrier-current telephone system between cab, caboose and a block station on the Bel Del branch [March 1942 TRAINS], and while this installation is experimental, enough progress has been made to warrant a complete technical report in a recent issue of *Railway Age*.

Considering two-way squad-car radios and walkie-talkies, the thing looks absurdly simple, but it isn't. The railroad is strung out over a long distance, and equipment must withstand much more interference of various kinds than exists in other fields. The experimentation has followed two general lines: pure radio, and carrier systems by which the voice currents are superimposed on a high-frequency current which is impressed upon the rails and a line wire paralleling the track. The only radio involved in this method is the short jump from line wire to train.

Up to now the development of pure radio for railroad use has run into trouble chiefly because of the shortage of useful wave lengths. In 1930 the F. C. C. withdrew licenses for wave bands previously assigned for railroad use, because the wave lengths were much more urgently needed by other means of transportation which did not have the railroad advantage of constant contact with rails to provide a perfect and automatic signal system. Some work was nevertheless carried on during the 1930's under experimental license, but it was not untol the recent development of frequency modulation multiplied the available wave lengths that the railroads again had incentive for serious research in straight radio.

The carrier system, fathered chiefly by Union Switch & Signal Company, likewise was no easy development. The track over which this system is used must be bonded at rail joints, and line wires must parallel the railroad continuously. The carrier frequencies may interfere with carrier currents used in the railroad communication systems on the line wires themselves. The carrier system might not be readily applicable to a switching road serving an extensive industrial district with neither bonded rails nor line wires, but on many main lines it might be more feasible than straight radio.

The primary advantage expected from telephone communication with moving trains is increased operating efficiency. Safety has been much mentioned by newspaper editorials and columnists, but it is extremely unlikely that this will ever become more than a secondary advantage. In some situations, the ability to talk with the engineer of a moving train might avert accidents, but this would always depend upon human judgment and operation, while a primary safety device should be completely automatic. The railroads, because trains run on steel rails, already have in the standard track circuit a completely automatic and practically infallible safety device which is unique to the railroads. From a safety angle much more can be accomplished by extension of devices in which the track circuit plays a part, such as cab signals, automatic block, centralized traffic control and interlocking.

But the increased operating efficiency possible with some means of train communication is more than a talking point. It is a known result which has been the inspiration for the 30 years of experiment toward a practical method. Particularly in yards is it of great advantage to have constant communication with the switch crews. In the big ore dock yards along Lake Erie, switch crews could be called to the right spots for immediate action when a steamer docks. In large classification yards all across the land, new orders could quickly be given crews without their reporting to the yard office.

And on freight trains communication between caboose and engine cab means quicker time over the road. Now the engineer waits a respectable length of time after whistling in the flagman and then starts, hoping the flagman is aboard, for seldom can the front-end crew see the highball signal from a rear end a mile away. On the D&RGW's test run the radio was used to report the flagman aboard and also to report when the rear end of the train cleared the siding switch so that road speed could be immediately resumed. At one time during this same run the rear-end crew noticed smoke coming from the wheels of a car near the rear of the train. Without radio, an emergency application of brakes would have been made from the caboose, with danger of pulling a drawbar. With radio, the smoke was reported to the engineer, who set and released the brakes without stopping. The smoke, undoubtedly due to sticking brakes, cleared up immediately. On the Pennsylvania's Bel Del Division, where manual block-signaling is in effect, freight trains are allowed to proceed at restricted speed into a block which is already occupied by another freight train. Often the first train clears the block just a few minutes later, but before train communication was installed the second train still proceeded through the entire block at slow speed. Now the block operator reports to the train crew by phone that the block is clear and speed is resumed immediately.

It all began back in 1914 when the Lackawanna experimented with wireless telephone between moving trains and stations up to 50 miles distant. Later in the same year a radio telephone conversation was carried on between a San Pedro, Los Angeles & Salt Lake (now Union Pacific) train and the Los Angeles station some five to eight miles away. In 1920 the New York Central began experiments with the so-called wired wireless or carrier system, and the Milwaukee Road carried on experiments on its electrified lines in Montana, using the trolley wire as a means of carrier-system train communication.

Other experiments have been in progress almost continually in the years between, according to Francis Koval, publicity manager of the North Western, who has made an extensive study of the history of train communication. One of the more interesting installations, which was apparently successful from the technical standpoint, was a train telephone on Canadian National trains between Montreal and Toronto, installed in 1930. Passengers could be connected with any Bell System phone via carrier transmission through rails and line wires. This installation was intended not to expedite train service, but as a passenger convenience. It was widely advertised, but after a few months was discontinued for lack of patronage.

A straight radio system at the world's largest freight yard, Proviso of the C&NW, was installed by General Railway Signal Company. This used a wave length in the most crowded part of the radio spectrum, and the experimental license covering it was later revoked by the F. C. C. with the recommendation that future experiment in pure radio for railroad purposes be in the band of ultra-high frequencies. The Union Switch & Signal Company's carrier system is in use in the Sharonville (near Cincinnati, O.) yard of the New York Central, Yard B of the Pennsylvania at Columbus, O., the Roanoke (Va.) yard of the Norfolk & Western, the DeCoursey (Ky.) yard of the Louisville & Nashville, and 10 others.

Yards will also be the scene of much new experimentation. The Rock Island plans to use radio in its Blue Island yard near Chicago, and the starting point of Burlington tests was also in a Chicago yard. The D&RGW not only made road tests but tried radio in its Roper Yard, Salt Lake City.

The log of the trip from Denver to Salt Lake City and back with radio-equipped Rio Grande Diesel freight locomotive 548 and caboose 01407 may well be prophetic of future improvements in operation of long freight trains. Hardly had the train left Burnham Yard in Denver when the caboose called the engine to say that the helper engine on the rear end wanted to take water at 48th Street. Half an hour after leaving Denver, orders were picked up on the fly and the rear- and front-end crews used the phone to compare orders. At Kyune the radio was used to direct the cutting-out of helper engines, saving from 15 to 30 minutes. At Gilluly the radio was used to report that the brakeman had completed train inspection and was aboard at the rear end.

On the return trip the front- and rear-end crews used radio to decide where they should get in the clear for No. 8, and finally picked Sutro. The conductor said this advanced the train 13 miles over the point where it would have headed in had he not been able to converse with the engineer about the passing point. In climbing Soldier Summit the radio was used to tell the front end that the rear helper did not need to take water at Colton, thus saving an unnecessary stop. Going through a slow-order area, the rear brakeman reported to the engineer by phone as soon as the caboose had cleared the slow track and speed was resumed immediately. Whenever switching was needed the radio was used to plan the work ahead of time and to coordinate front- and rear-end work. The only time the apparatus did not function was while the train was passing through the 6½-mile Moffat Tunnel. None of the 51 shorter tunnels on the line caused trouble. Officials estimated that some three hours' running time was saved on the round trip.

When war ends, some now-secret developments may be released which will still further speed the tempo of research. Meanwhile enough successful experimental work has been carried on to show that communication with moving trains is possible by means of either pure radio or the carrier system of wired radio. Now, like any other new device, must come the development of simplicity and ruggedness sufficient to make the systems thoroughly practicable, and costs such as to make train communication economically justified.

The Far-Reaching Santa Fe

A PHOTO NARRATIVE

From Chicago to California on its own rails, AT&SF is continent's fourth longest railroad

In mileage the Atchison, Topeka & Santa Fe is the continent's fourth largest railroad, surpassed only by the Canadian National, Canadian Pacific and Southern Pacific. In revenues it is fifth largest, and on the stock market Atchison is one of the blue-chip symbols of the railroad business.

The little Kansas railroad which was started by Cyrus Holliday at Topeka in 1868 now has 13,500 miles of line and is the only railroad running from Chicago into California on its own rails. One of the western terminals is San Francisco, reached in 1900 when Edward P. Ripley, one of the country's great railroaders, was founding the Santa Fe tradition of good management. The neatly modern station just off Market Street is connected by bus over the Bay Bridge to trainside in Oakland. This bus connection is a comparatively new wrinkle. Formerly Santa Fe trains connected with San Francisco by ferry across the bay.

Trains out of Oakland include two streamliners for Bakersfield, where they connect by

Santa Fe.

The Cyrus Holliday, first locomotive built at Topeka.

bus for Los Angeles (the Santa Fe's all-rail route between San Francisco and Los Angeles is quite roundabout), and two San Francisco sections of Chicago trains, the *Grand Canyon Limited* and the *California Limited.*

The southbound and eastbound journey starts north and west, through Berkeley and Richmond, large Santa Fe terminal. A line branches here to Ferry Point, original Santa Fe terminal on San Francisco Bay. The route swings eastward close to the Sacramento estuary, tunnels the ridge with a 1⅛-mile bore, and at Stockton turns southeastward down the broad San Joaquin Valley, one of the country's richest agri-

Jim Morley.

Santa Fe freight up the Tehachapi passes SP Daylight.

cultural regions. The snow-capped Sierras are almost always in view, and a popular side trip at Merced is via the Yosemite Valley Railroad to the national park.

Fresno, center of the dried-fruit and sweet-wine industries of the world, gives a clue to Santa Fe success, for the prosperity of a railroad is inevitably tied to the productivity of the area it serves. The Fresno district annually produces 225,000 tons of raisins, and 30 wineries have combined storage capacity of 35 million gallons. Table grapes, peaches, figs, citrus fruit, alfalfa, dairying, and stock-raising add to the traffic which Santa Fe shares here with Southern Pacific. Another clue to Santa Fe prosperity is the branch leaving the main line at Fresno and tapping the small agricultural towns closer to the eastern extremity of the valley. Santa Fe trackage networks the rich areas of central and southern California, Arizona, New Mexico, Texas, Oklahoma, Colorado, and Kansas.

The broad floor of the valley seems incredibly

The California Limited pulls out of Oakland station at 8 a. m. It has sleeping cars and coaches for the East, and makes bus connection at Bakersfield for Los Angeles.

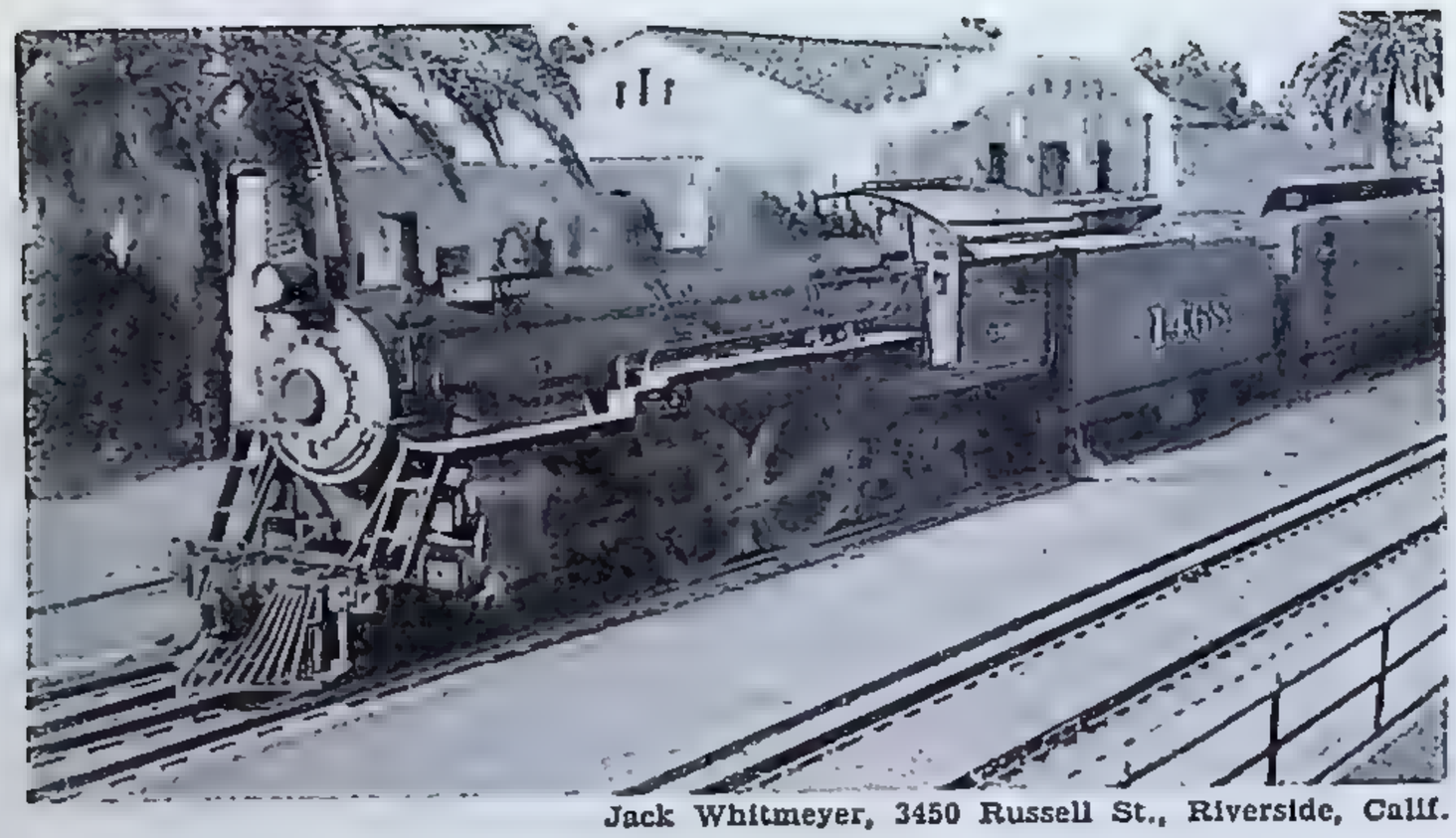
flat and the railroads incredibly straight and level, but at Bakersfield, where the buses connect for the run over the ridge to Los Angeles, the mountains draw closer. Not far east the climb starts over the Tehachapi Mountains, barrier between the central valley of California and the Mojave Desert. The summit of the range is achieved by a remarkable series of loops and tunnels, including the famous Tehachapi Loop, 3795 feet long. This line was built and is owned by the Southern Pacific, and the two railroads use it jointly. If we are on the *California Limited*, the *San Joaquin Daylight* is not far ahead of us, but it will leave the Santa Fe at Mojave, just over the range, where the Southern Pacific line turns south toward Los Angeles. The Santa Fe line from Los Angeles joins at Barstow, 29 miles farther east.

On that Santa Fe line from Los Angeles, not far south of Barstow, is famed Cajon Pass by which the railroad descends almost 3000 feet into the southern California valley from the Mojave Desert with grades of 3.4 per cent down and 2.2 per cent up. San Bernardino, south of Cajon Pass, has the largest Santa Fe shops west of Topeka, and the huge yards seem alive with refrigerator cars, for this is the center of the orange empire. Sixty per cent of all America's oranges and practically all our lemons are grown in Santa Fe territory.

Sixty miles almost straight west of San Bernardino, in the valley, is Los Angeles, where Santa Fe uses the recently built Union Station [May TRAINS]. The only direct railroad service between Los Angeles and San Diego is over the Santa Fe's Surf Line, much of which is practically on the edge of the Pacific. Two streamliners make a total of four round trips daily.

But back to Barstow, where the

Jim Morley.



Jack Whitmeyer, 3450 Russell St., Riverside, Calif.

Los Angeles and San Francisco lines join for the long road east. Here at the station is a Harvey House, a distinctively Santa Fe institution. Before the days of the dining car, Harvey hotels and dining rooms were established along the Santa Fe at intervals just right for meal stops. Now the traveler hardly is aware of the Harvey Houses unless he stops over to see some of the scenic Southwest, but it was only a half dozen years ago that the brakeman came through the *Navajo* as it crossed Cajon and called, "Thirty minutes for lunch at Barstow." As the train came to a stop almost all passengers were off in a hurry and seated at the horseshoe-shaped counter of the Harvey House. Then began a marvel of efficiency. A bevy of Harvey girls went to work and all customers were served practically simultaneously. The half hour proved ample for a good meal and the train was on its way across the Mojave Desert toward Needles and the crossing of the Colorado River into Arizona.

This is a state of remarkably varied climate and scenery. Many of the mountains are extinct volcanoes. The San Francisco Peaks, of which the Santa Fe passenger obtains a fine view near Flagstaff, are eruptive cones. At Williams a branch leaves the main line for the Grand Canyon, where the Santa Fe's station is within 60 seconds' walk of the canyon rim. But

R. H. Johns.

East of Los Angeles, two Santa Fe lines run through the orange country to San Bernardino. The local, above left, is at Riverside station. North of San Bernardino is famed Cajon Pass; above. The freight at left is on the main line near the Arizona-New Mexico line. In New Mexico pueblo villages like San Felipe (right) can be seen from the train.

H. Sullivan, Placentia, Calif.

H. W. Stowell, P.O. Box 105, Albuquerque, N. Mex.

in addition to scenery and climate, Arizona has rich agriculture and mining. The copper mines are among the richest in the world.

The country is not all flat, and indeed the Santa Fe has extremes of 496 feet and nearly 7000 feet altitude along its Arizona main line. The branch-line trains to Grand Canyon climb continuously to reach the canyon rim, and it may be topcoat weather there when it is sweltering at lower altitudes.

Not far east of the junction for Grand Canyon the main line crosses Canyon Diablo, a startling

Eastbound freight out of Bernalillo, N. Mex. Triple-headed Chief enters tunnel at Raton Pass.

225-foot-deep gash in the plateau which is crossed on a high steel trestle. Winslow, next division point, is called the Meteor City on account of the nearby crater which was formed years ago by a huge meteorite. West of Winslow only oil-burning engines are used.

Just across the border in New Mexico is Gallup, a busy division point where it is a treat to watch trains, especially during late afternoon and evening of a Wednesday or when the through passenger trains in westbound *El Capitan* and *Super Chie* a-week streamliners. Some 35 miles here the Santa Fe crosses the Contin vide at an altitude of 7248 feet, neithe nor as spectacularly scenic as Glor Raton passes farther east.

About one-third of the way east ac

Top, O. C. Perry; bottom, W. K. Aughenbaugh. Center, R. M. Ritchie; bottom, Wesley Krambeck.
ge City, Kan.; station scene in Topeka. Jointed-boiler articulated loco was an experiment 30 years ago.

Mexico the knowing traveler watches for Dalies, where the road splits into two main lines. The principal line runs northeastward through Albuquerque, Glorietta and Raton passes, and a corner of Colorado into the Arkansas Valley, which it follows eastward halfway across Kansas. Principal passenger trains run this way. The other line runs east across the Texas Panhandle and Oklahoma, rejoining at Newton, Kan. Most freight goes on this southern line.

Raton Pass, coveted in construction days by the Rio Grande but pre-empted first by Santa Fe, has two tunnels, each single-track, at the crest. Heavy helper service is needed on its steep grades, especially the westbound 3.5 per cent climb. The old Santa Fe trail, trade route for nearly 400 years, used this same pass.

Across Kansas, Santa Fe trains clip off the

Paul Stringham, Rode Island News Stand, Peoria, Ill.

Paul Stringham.

The Chief, running on left-hand track, passes an extra westbound freight on double track near Chillicothe, Ill. Below is a 2-6-2 pulling the local freight on the Santa Fe's only Illinois branch, from Streator to Pekin. Above, right, are the C&EI's Dixie Flagler for Florida and Santa Fe's El Capitan from California in Dearborn Station, Chicago. Below is the Super Chief in Chicago with the Pennsy's Chicago River lift bridge in right background.

Chicago & Eastern Illinois.

level miles on some of the country's fastest schedules. Kansas City is reached almost before one realizes that he has crossed all of a state which uses more wheat for seed than 28 other states harvest!

A Kansas creation, the Santa Fe was extended eastward into Chicago by William B. Strong, the great builder of most of the road, in 1887, and this stem is today the Kansas City - Chicago short line. It crosses the Mississippi at Fort Madison on a new eight-span steel bridge with extra deck for highway traffic. Into Chicago the route is through the heavy industrial district along the drainage canal, and the end of line is in Dearborn Station, used by more railroads than any other Chicago terminal.

Santa Fe.

Pennsylvania Pygmy

For half a century the Coudersport & Port Allegany, short short line, has served Potter County

BY THOMAS U. JOHNSON*

ALONG the crystal-clear headwaters of the Allegheny River, among the steep green hills of northern Pennsylvania, winds a short line which, though lacking in gaudy streamliners and hot-shot tonnage, and scarcely able to compete with the Colorado narrow-gauges in breathless grandeur, still is packed with appeal for every foot of its 32.36 miles of right of way. The road is the standard-gauge Coudersport & Port Allegany, and it comprises nearly every feature calculated to delight the railway devotee. It possesses scenic background unsurpassed in the East; it is accessible to the large numbers of fans living in the Middle Atlantic and Great Lakes states; it is small enough that it may easily be seen in a day; and it operates some extremely interesting and photogenic equipment.

The line runs for the most part in Potter County, Pennsylvania, though its western terminal lies in adjoining McKean County, at Port Allegany, where it connects with the Pennsy's Buffalo-Harrisburg line. Running thence eastward up the Allegheny Valley to Coudersport, and beyond to Newfield Junction, it connects with the B&O's iron (formerly the Buffalo & Susquehanna).

The road is, in a manner of speaking, a vestigal remain. Of the many short lines, both narrow- and standard-gauge, which years ago penetrated the thick woods and climbed the steep hills in this region, it is one of the few to survive intact.† Its early history is fairly typical of that of many of these lines which came into being when the natural resources of the region —oil, gas, lumber and tanbark—were first seriously exploited and when industry was outgrowing short pants, with mushrooming enterprises on every hand demanding cheap transit of raw materials and outlets to distant markets for divers improved mouse traps.

In the case of the C&PA, it was lumber and its by-product, tanbark, which were responsible for its existence—and so they remain, essentially, today. The original articles of association were drawn up on April 1, 1882, and provided for the organization of a company to "construct, maintain, and operate a railroad having a gauge not exceeding three feet." The original line was built on the right of way first surveyed by the Jersey Shore, Pine Creek & Buffalo Railway between Port Allegany and Coudersport. Original equipment consisted of 1 locomotive, 1 baggage and express car, 1 passenger car, 25 flat cars, 10 gondolas and 5 box cars. This equipment was supplemented immediately by further purchases, including a number of "transfer trucks." It was common practice simply to change trucks when cars of wider gauge entered a narrow-gauge system. This obviated the necessity for much reloading, and in 1884 alone saved the C&PA $1400. Net annual earnings during the early years averaged about $14,000. The decade from 1880 to 1890 produced good years and bad ones (such as 1887, when Massachusetts tannery strikes depressed bark shipments and the spring floods were too scanty to float the logs from camp to railhead). However, they were mostly good, and even in 1887 the directors were looking ahead, as they considered the advisability of conversion to standard gauge. Two years later the change was made.

* Acknowledgement is due S. B. Sawyer, superintendent of the C&PA, and Lawrence and Joe Tasilo, engineer and fireman, for their cooperation with Mr. Johnson.

† In July, 1942, a flash flood washed out fills and bridges and ruined seven miles of roadbed between Coudersport and Port Allegany, a distance of 17 miles. Freight-service-only now operates from Port Allegany to Roulette, eight miles. A daily mixed train is operated both ways between Coudersport and Newfield Junction, 16 miles. The damaged section may be repaired after the war.

Past, baggage; present, maintenance. Thomas U. Johnson.

Top, Thomas U. Johnson; bottom, J. Tarbell collection.

Upper: Meandering leisurely down the pleasant Allegheny Valley between Coudersport and Port Allegany, No. 15 bends her mixed consist into a turn. Lower: Manpower jumps in to aid thwarted horsepower in an attempt to buck a drift atop Newfield Junction hill. Such scenes as this are not unusual during the winter months.

By 1890 the line was building south of Coudersport, and in August of that year operated its trains into Sweden Valley. In 1894 the branch connecting the C&PA with the Fall Brook Railway at Ulysses was projected. (The Fall Brook was taken over by the NYC a year later.) By 1895 the line was pushed eastward up the grade to Newfield Junction (where the C&PA connects with the B&O), and down into Ulysses, the first train running into Ulysses in November of that year. The line had achieved its maximum mileage.

In order to make these extensions and finance other needed improvements, the road was forced to increase its total bonded indebtedness to $245,000, which bonds were made payable in 1916. In the latter year the company underwent a reorganization with the issuance of a new series of bonds. Through all the years of its existence, the C&PA has enjoyed a comfortable if not booming prosperity with good solid returns for its investors, in the form of sizable dividends which have rolled in as regularly as the fiscal years succeed one another. One by-product of this circumstance has been the fact that little cash reserve has been built up and little liquid assets accumulated for the purchase of new equipment, improvement of roadbed, installation of heavier rail, and other improvements which would have rendered the C&PA a far more efficient line today. Nevertheless, the road is still operating with a comfortable margin of profit—the reason being that the basic regional industries have survived and that new industries have come along to compensate for losses sustained due to diminished lumbering activity and the inroads of the trucking lines.

At present the road comprises 32.36 miles of mainline track between Port Allegany and New-

Thomas U. Johnson.

Baldwin-built in 1911, No. 6 pauses to pose amid rustic splendor.

field Junction. (Service to Ulysses was abandoned in 1924.) At Port Allegany the line connects with the Pennsy's Buffalo-Harrisburg line. At Newfield Junction connection is made with the B&O going north to Wellsville, N. Y., to intersect the Erie's iron, and south through Galeton, Ansonia and Dubois to connect with the old BR&P (now B&O). To the B&O, the C&PA hauls charcoal, toys, tanned leather, wood-tar products and tanning extracts from Coudersport's factories. From the B&O are received gasoline, lumber for the toy plant, grain, stone, road tar, hides, and coal for Coudersport's milk condensery, toy factory and tannery. The Pennsy receives from the C&PA a similar flow of freight. Both Pennsy and B&O receive large shipments of potatoes in season. Potter County has become widely known for its excellent potatoes. The line also hauls considerable lime and fertilizer, as well as lumber and tanbark.

The motive power and rolling stock of the C&PA, although not numerically stupendous, comprise some interesting and photogenic items. The "first-class" train we shall dismiss with a polite gesture of disdain and deprecation, inasmuch as it is a gasoline car possessing a set of rubber-tired wheels and a set of flanged wheels which may be retracted for highway service, trips to the filling station, etc. With due charity for this unhappy hermaphroditic travesty in the sight of all true sons of the order of the holy smokebox, let us simply say that she *is* economical, and unobtrusively quiet. The present motor railbus is successor to an earlier gasoline car, built in 1922. This car was equipped with a four-wheel pilot truck and a two-wheel driving truck. For nearly two decades she carried the bulk of the C&PA's passenger service until replaced by the present combination rail-highway hybrid.

By way of happy contrast, let us pass on to what an unsentimental, utilitarian age regards as "second-class" trains. The motive power consists of three Baldwins averaging about 30 years in age, although one in particular appears much older. This sightly little item answers to No. 6, and is a very graceful and attractive specimen of the classic 4-4-0 or American type. She was built by Baldwin for the C&PA in 1911. With her high wheels, oil-cup lubrication and archaic lines, practically all she needs are link-and-pin couplings, diamond stack and embellished head lamp to transport the rail archeologist right back to the elegant '90's.

The other motive power is not so spectacular, but is worthy of remark. No. 5 sits on the cripple track awaiting the verdict which will either restore her to service or will condemn her to a one-way trip. She is a 4-6-0 built by Baldwin in 1907 for passenger service, later shorn of her glory by having her drivers replaced by smaller ones. No. 15 is the latest acquisition in the way of steam power. She was also built by Baldwin (1905) and is a 2-8-0, originally intended for service on the Lehigh & New England. Some time later she moved on to the Bellefonte Central line. The latter sold her to a dealer in Buffalo, N. Y. The C&PA saw her there, recognized her suitability for the needs of the road, and bought her, trading in old No. 1. Although no longer glorying in the challenging grade up to Newfield Junction or the gentle river-valley slope down to Port Allegany, no account of the C&PA would be complete without a word and a passing tribute to No. 1. She was a 4-6-0 experimental Vauclain compound built by Baldwin in 1891, and as a locomotive innovation was loaned to various roads to show off her efficiency under actual operating conditions. In 1893 she was displayed at the Chicago World's Fair, and a large wall photograph taken at that time reveals a handsome straight-boiler, high-stepping Ten-Wheeler not unlike the locomotive the immortal "Casey" highballed to everlasting fame. For a time she paused on the Pennsy, but that road found her too light for the demands of heavy mainline passenger service. In 1896 the peripatetic Vauclain was purchased by the C&PA, and until her passing she was the glory of the line. Brass hats and section men still speak of her with pride and affection. Sometime during her C&PA career her compound cylinders were replaced by a simple type and she was rendered a more efficient loco for hillbilly freight service by replacing her large drivers with smaller ones. Finally, in April of 1941, she was traded for No. 15 and was either sold to—or gratuitously showered upon—the Rising Sun mob. *Sic transit gloria mundi!*

Rolling stock now consists of 18 freight cars and 2 passenger cars. The freight cars include 10 gondolas numbered from 160 to 177, 7 flat cars numbered from 101 to 149, and 1 box car numbered 201. A four-wheel caboose completes the freight consist. The passenger cars are both combination passenger, mail and express, and are numbered 6 and 11. They are of wooden construction with open platforms and four-

wheel trucks. Miscellaneous equipment includes a cabin flange-type snow plow which is coupled ahead of a locomotive. Potter County winters are severe; and heavily drifted snow, steep grades and relatively light traffic combine to make winter operations difficult at times. A maintenance train includes a venerable tool car which once carried baggage and still rolls on wooden-frame trucks! A fine old coach (No. 2), now bereft of trucks, serves as a paint shop behind the four-stall roundhouse. Another piece of "rolling stock" which no longer rolls is an interesting old coach dating from the '80's and having separate inset panels below each window. The latter are arched at the top. Regrettably, what might have been a museum piece now is used as a pigsty.

A RIDE on the C&PA freight up the grade to Newfield Junction and return is a never-to-be-forgotten experience. The schedule calls for the run to be made in early morning, but if business warrants, a trip is also made in the afternoon—or occasionally the afternoon run is substituted for the morning. Such was the case when I made my junket over this line through some of the loveliest wilderness in the East.

The rolling Pennsylvania hills rise on each side of the Allegheny River Valley to form vistas familiar to everyone who has traveled in the Keystone State. At Coudersport, however, the thickly wooded, rugged ridges assume the proportions of mountains, looming higher and seeming to elbow one another as if to array themselves in closer formation to exclude an encroaching civilization. In this they have been partially successful, too, for on their precipitate slopes and in their narrow valleys grow some of the last of Pennsylvania's virgin timber, and up their narrow ravines may still be heard the wildcat's scream, while in the dark, wooded recesses the black bear sniffs for a bee tree and in the sunlit clearings deer pause to graze as the shadows lengthen. This country is a sportsman's paradise; and here, in Potter County, Pennsylvania, A. D. 1944, are more black bear than in any other area its size in the world. More than 6000 deer may fall as hunters' trophies in one season. Squirrels, ruffed grouse, pheasant, and other small game abound. A glance at the tumbling clear streams and the angler need not be told that brown and speckled trout are there.

But we come not to write a sportsman's prospectus, but to ride the train! We board the little 2-8-0 at the coal chute just as she has finished the job of throwing the freight together, from which effort she stands, panting, as she takes on coal, then water. We soon get on our way, bell clanging and whistle screaming. A momentary stop at the station for orders and we are off again. We pick up speed through the village, where the right of way is in the middle of a quiet shady street lined with respectable Victorian homes. Almost immediately we begin to climb. We stop on the outskirts of the village, switch a carload of toys into the train, which now numbers four cars plus the four-wheeled caboose. With pilot headed east, we are about to cross the northern edge of the wilderness. The green-clad hills close in and almost at once the tempo of the exhaust, the pounding of the drivers on the 60-pound iron, and the creaking of the drawbars bespeak a bitter upgrade fight.

We ascend the Allegheny Valley as the river rapidly dwindles in size until, as the tall green hills close in and the engine exhaust is thrown back into the cab by the deep cuts, the stream is but a tumbling brook, which we cross and recross as we wind and turn. Looking back, we see the caboose first on one side, then the other as we lurch and sway over the tortuous roadbed while the engineer cushions his teeth on a cigar and gaily waves to the children of the few dwellers along the route.

To attempt a description of the C&PA without a word about the brothers Tasilo would constitute an omission of essential detail. Lawrence, the engineer, has been with the railroad nearly 30 years, and Joe, the fireman, for about 20. When the railroad bug bit these boys, vaudeville lost a team! Discounting the road and the scenery, a ride with them is not to be forgotten. Their line of patter and guff would back a traveling salesman right out of the smoker! After decades of service they go after their jobs with all the verve of fans in the cab for the first time. This, incidentally, is a trait prominent in all C&PA employees; there's something about railroading in these hills that gets a man, they'll tell you. As the train winds above the pool of a beaver dam and flushes a covey of quail from the laurel along the tracks, while all about is cool, green beauty, you understand something of what they mean.

We sit in the cab simply watching the scenery for the most part, occasionally snapping a picture through the cab window or climbing up on the tender for a better vantage. By this time the Allegheny has all but disappeared, and Joe points to our left, where, about 500 feet from

the right of way, a mere trickle issues from beneath a large tree. Here emerges the river whose waters eventually become a part of the broad Ohio and flow some 2000 miles to reach the Gulf of Mexico.

We pick up speed as the track momentarily levels off. Soon Lawrence, from the engineer's side of the cab, points to a tiny spring, the source of the Genesee River, which flows 120 miles to Lake Ontario. We are told that a mile from here is the source of the west fork of the Susquehanna. Thus, the watershed of three great drainage systems is formed by this ground.

Now we are coming into Gold, and noisily grind to a halt beside a water tank. As we pause, we realize that we have broken out of the timber and are on a narrow plateau. We are near the end of the climb. In a few minutes, one last stiff climb brings us to Newfield Junction and the little Consolidation pants across the diamond of the B&O crossing. Our locomotive deposits her cars on the waiting track, picks up the cars left by the B&O that morning, and turns on the wye. Just as we are made up and ready to go, a B&O 2-8-0 with a leash of a dozen or so cars puffs around the mountain, crosses the diamond, then picks up our deposit and departs.

Lawrence tests his air, eases off the brakes, and points out that management of the train on the downgrade trip is far trickier than it is on the upgrade. Ascending, the worst that might occur is a stalled locomotive; descending, a slip might easily spell disaster.

Unfortunately, the weather does not favor our photographic attempts and our high hopes for good shots from the pilot and running boards are foredoomed. We decide to try a few from the caboose and carefully pick our way back over the bucking, lurching cars to the doghouse, where the company is quite as entertaining as up ahead. The little four-wheeler has been recently shopped and is as spic and span and snug as a ship's cabin. We go topside for an unobstructed view.

The trip back is one of rapidly changing mountain vistas as the train coasts around curves, past Potter County potato fields, into dense woods, and over trestles, rocking and swaying while wheels scream protest at the curving track. Occasionally we see a deer stop in wonder, then turn and crash off through the woods.

We go forward once more to return a borrowed pair of gloves and thank our hosts as we draw into Coudersport. The return trip has required but a fraction of the time taken by the trip up. As the shadows lengthen, the train rolls into the shady town whose inhabitants sit on their verandas and watch us go by. This railroad has been part of the daily life of Coudersport for half a century, and aside from the economic aspects of the line as it involves the welfare of a civic population, we can't help but reflect on the rare privilege of having a real railroad in one's front yard!

Operation at Newfield Junction, eastern terminal of the line. C&PA No. 20 is ready to slide downgrade. The B&O freight stretches diagonally across the picture, her engine having picked up three cars dropped by No. 20 on the track in the background. No. 20's caboose is in the foreground.

Thomas U. Johnson.

The 1-spot, chuffing on down, is a Baldwin-built six-wheeler.

A six-wheeled 24-ton Porter-built locomotive with 36″ drivers.

Kauai Island Sugar Railroad

The island of Kauai (kah-ooh-ah-ee) is the northernmost of the Hawaiian group, 63 miles across a channel from Oahu (see next page). The chief product is sugar and the largest producer is the Lihue Plantation Company, Ltd. Some activity and part of the equipment is shown here. Above is a sugar-cane train crossing the Wailua River. The three views at right, top to bottom, are: temporary field track to left of permanent rails; replacing 35-pound rail with 45-pound; Engineer "Joe" at the throttle. Joe is Portugese and a typical island railroader. Lower left: No. 4 draws water from a cane-field hydrant.

All photos by Pvt. Charles Marvin Reyner, U. S. Army.

Narrow-Gauge on Oahu Island

Unencumbered by interchange difficulties, three-foot-gauge line far out in the Pacific does rushing war business

BY LIEUT. WILLIAM MOORE, U. S. N. R.

THE past few years have seen so many "last trips" and the decline of narrow-gauge railways that it is refreshing—yes, downright encouraging—to find a three-foot line with not only a splendid past but a booming present and a future far from gloomy. Although 2200 miles out in the Pacific, this finely operated railway is very much American and very much a part of the active war effort.

The official title is the Oahu Railway & Land Company, but the rolling stock is lettered only "Oahu Railway." The main line runs northward along the coast of Oahu Island (Hawaii) from Honolulu to Kahuku, a distance of about 70 rail miles. A P-47 flying a straight course between the two cities would travel only 25 miles. Branch lines and second track bring the total track owned to 157.64 miles. Competition, at least from other railroads, is nonexistent, but prior to the war the usual inroads had been made by buses and trucks—so much so that regular passenger service was suspended just two months before the opening of the war in the Pacific area.

The main line follows very near the shore most of the way, and never rises higher than 65 feet above sea level. One important branch runs inland from Waipahu, nine miles north to Wahiawa in the center of the central plateau. This line is a continuous 3 per cent grade for most of the winding distance up Waikakalaua Gulch, a picturesque ravine through lava rock, terminating at an elevation of more than 900 feet. It has recently been laid with 90-pound rail and new ballast, and is the heaviest roadbed construction on the railway.

The operation of the Oahu is modern and efficient. It is block-signaled (three-position upper quadrant) from the Honolulu Terminal to Waipahu and to the end of the Wahiawa Branch, about 23 miles. The line is double to Aiea, eight miles from Honolulu, and once was double for another five miles, but diminishing traffic in the 1935-40 period caused a reversion to single-track operation so that maintenance could be lessened and old rail salvaged for sidings and other purposes. Train dispatching is by telephone; the use of short-wave radio for this purpose after the war is already receiving serious consideration.

Freight operation is by far the most important, and a maximum volume is handled under present conditions. No cabooses are used even on mainline trains, which run to 40 cars in length and are frequently double-headed when the tonnage is high. It is quite a sight to see two Baldwin Consolidations of the late '90's highballing 40 box, oil and flat cars on a good double-track roadbed, passing heavy bus and truck traffic on eight lanes of pavement on either side of the Oahu's right of way.

The Honolulu Terminal is attractive and modern. Erected about 1925 on the site of the original station, the style is mildly Spanish and typically tropical, with general offices above the usual waiting room, ticket office, lunchroom and freight facilities. Four splendid photo-murals adorn the walls. In recent years, the main entrance to the station on King Street west of the center of the city has been arranged to handle the company's passenger buses, which give service to many points formerly served by passenger trains.

J. ss Frazier.

The original 19, which has since been replaced by a Diesel.

Gilbert H. Kneiss.

The Sunday afternoon special leaving Honolulu for the 15-mile run to Barber's Point.

The roundhouse and shops are located several hundred yards west of the main terminal and are landscaped with palm trees and grass to form a neat and orderly group of buildings. A busy turntable serves all the roundhouse tracks, and facilities for fuel oil and water are adjacent. Storage and repair sheds for passenger and freight cars are not far distant, and, as is customary in tropical climates, these are roofed over but otherwise open to a free circulation of air. The first locomotive, No. 6,* is stored between two graceful palm trees near the roundhouse. Now painted a somewhat questionable shade of orange, she last ran under her own power in 1941 during the centennial celebration of Punahou School.

Equipment has come from many sources over the years, but much of it was designed and built on direct order of the Oahu. Some old-time steam engines could tell interesting stories of service on mainline roads long since discontinued. One is known to have come from the now-discontinued Pacific Coast Railway, near San Luis Obispo, Calif. Several locomotives were about to embark for Cuba and Puerto Rico many years back when changing financial fortunes started them on the route to the Hawaiian Islands. A few box cars still bear signs of their Denver & Rio Grande origin, and the trucks under some passenger coaches carry the cast-iron "BRB&L" of the old Boston, Revere Beach & Lynn narrow-gauge line in Massachusetts.

Most recent additions to the motive-power roster are two Diesel electrics supplied by General Electric, Nos. 15 and 19. Weighing 47 tons, each is powered by two 190-horsepower Caterpillar engines, driving motors which, in turn, drive on each of the four axles. The cab is centered and permits a good view in both directions. Painted gray with black trim and a polished brass "G.E." insignia on the cab side, each locomotive makes an attractive appear-

* Many of the early engine numbers were selected for the ages of members of the B. F. Dillingham family, whose financial and personal interest in the railway has carried along through many years. The youngest Dillingham daughter was 6 years old at the time the line was opened in 1889, so No. 6 went to the first locomotive. The second was numbered 8 for another daughter. Two sons, then 15 and 19, had early engines numbered for them. The original 15 and 19 have passed from use, but their memory has been perpetuated in the two newest locomotives, Diesel-electrics delivered in January, 1944, and numbered 15 and 19. Famous dates were also included in the numbering ritual. Two fine Baldwins received in 1898 were named *Reciprocity* and *Annexation* in honor of the two treaties with the United States pertaining to those important events. Later, when all engines were numbered, the years in which the treaties were signed (1876 and 1898) were applied to these locomotives as No. 76 and No. 98. They serve today as the usual motive power for two heavy passenger trains, and each carries a shiny brass star on its smokebox shield. All other engines on the line have their own numbers on the smokebox shield.

U. S. Na

Commuting train on the Oahu. The queer center-door cars are old coaches converted to carrying empty tin cans and reconverted to passenger service in the present emergency. No. 80 (opposite page) is a 1923-vintage Alco Mikado.

ance. More appealing to me, however, are the steam engines with their outside frames, small drivers, and their stack, bell, steam dome, and two sand domes (in several instances), mounted in quick succession atop a boiler that would seem small in the United States but which makes a most respectable appearance mounted on the narrow-gauge frame.

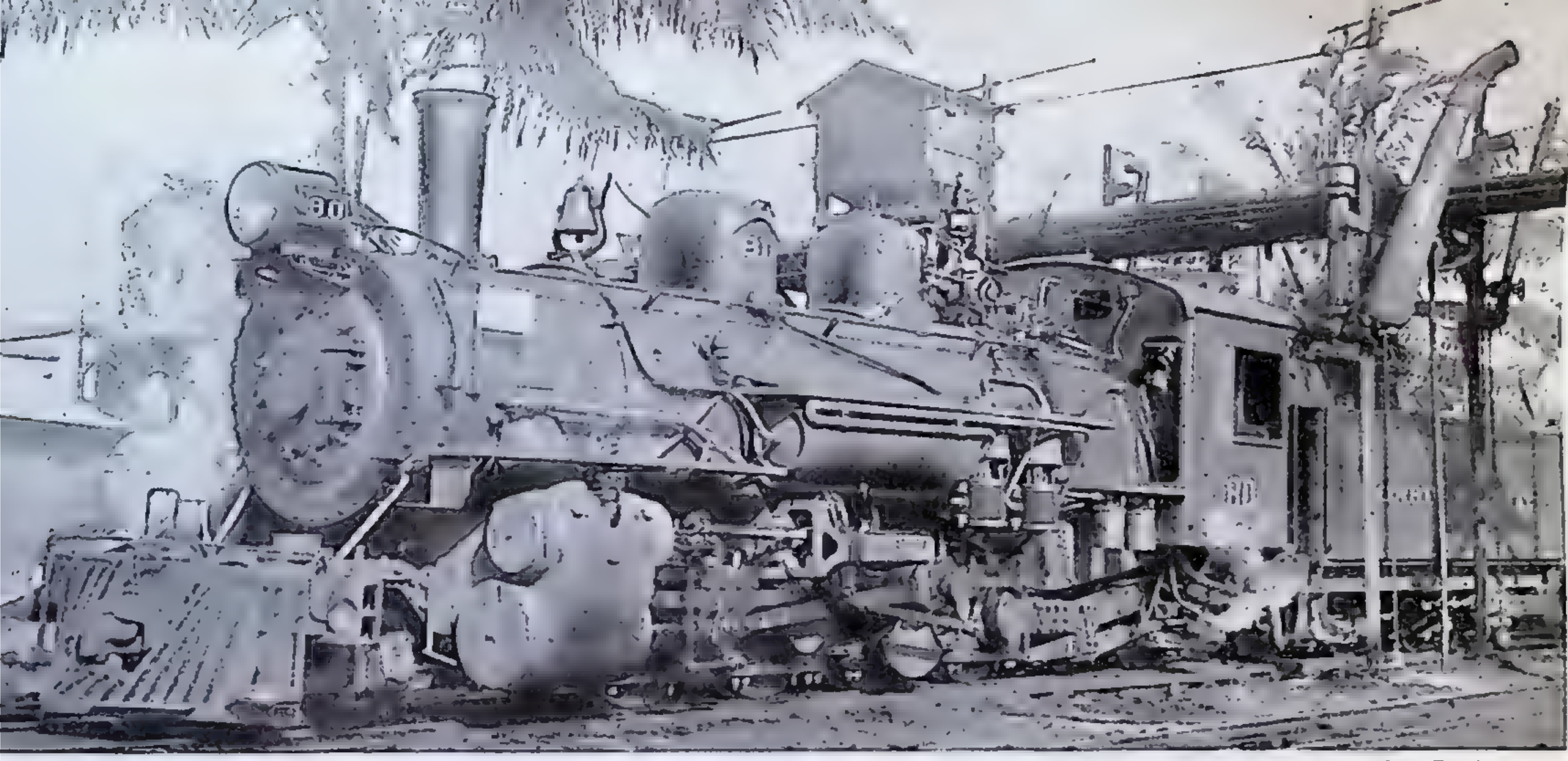
The passenger coaches, extremely primitive by mainland standards, have had an interesting history. Many were built in the Oahu Railway shops except for trucks, wheels and steel parts, which were purchased. All are of wooden construction. Some, from their flat roofs, would seem to date considerably prior to the road itself.

When passenger traffic dropped to a point of uneconomical operation, many of the coaches were converted into what were called "can cars." These were used to transport empty tin cans from a can-manufacturing plant in Honolulu to various pineapple canneries throughout the island. (The pineapple and sugar plantations created the original need for a railway and were the backbone of its freight traffic for many years.) A solid, sliding wooden door was installed in the center of each converted coach. In some instances the windows were replaced with wood inserts, and in others the glass was left in. Not a very handsome design, but an inexpensive method of obtaining useful cars from otherwise idle equipment. These cars retained their original green color but were mixed with box cars of time-honored red, giving a red and green Christmasy effect to the tonnage trains.

When war conditions suddenly changed the transportation picture, creating a gasoline and rubber problem as well as the problem of transporting many thousand workers from the city to army and navy activities some miles away, passenger cars were needed in a hurry, and, of course, obtaining new ones was out of the question. So seats, or rather wooden benches, were installed in the former "can cars" and they are now in daily use, 16 to 20 in a train, mixed in with more attractive coaches which were never converted to freight hauling. Those without glass windows are dark and not overly enticing, but the need is great and the distances comparatively short. The solid center doors, still in place, create an appearance duplicated on no other railroad.

The one outstanding passenger car is No. 64, a truly splendid vehicle, with one-third of its length devoted to a fine observation platform, enclosed in elaborate wrought-iron railings and protected with bright colored canvas awnings. The car is ideal for inspection trips, as from the platform a clear view can be had on three sides.

At the beginning of 1943, motive power and equipment consisted of 24 locomotives, 63 passenger cars, 1329 freight, box, cane and gondola cars, 24 service cars, 24 highway buses, 80 trucks and tractors, and 74 trailers and semi-trailers. Since then, the two new Diesel-electrics have arrived. An acute boxcar shortage was eased



Jess Frazier.

in October, 1942, when the War Production Board sanctioned about 100 narrow-gauge box cars to be constructed on the mainland for Oahu. With wooden sides but steel underframes and steel roofs, these cars are vastly superior to the older freight equipment. To be inconspicuous, they are painted a dull shade of light green. Some are labeled for the army, some for the navy yard, and some for the naval supply depot, but all are used interchangably with the Oahu's own rolling stock.

In connection with the sudden change in local transportation conditions, an amusing reversal of general practice has appeared. Customary traffic flow is from bus feeder lines to a rail line for the so-called "main haul." Near Honolulu the situation is just the opposite. A large number of civilian workers at a navy activity are beyond the reach of buses, the Oahu main line or accessible parking lots, so twice a day a Plymouth switcher dutifully hooks on to four ancient passenger coaches and makes a mile run to a more civilized location where the passengers swarm off the train and board buses for a seven-mile ride to the city.

Two 20-car passenger trains make a daily run for civilians from the Honolulu Terminal to the center of the navy yard. These trains are operated at good speed and on regular schedule, but the informality of the passengers is evident in their departure from the cars long before the train has come to a full stop at the terminal. Many of the men make their exit through the car windows, a practice deplored by the railway management but hard to control. However, riding the car roofs is definitely frowned upon.

The dispatch with which the trains are handled in the three-track city terminal is astounding. One afternoon the first section of the navy special pulled in and was unloaded via doors and windows in jig time, but even before completely discharged, switcher No. 9 had hooked on and the cars were on their way out of the yard while passengers were still disembarking —not over four minutes after arrival. The road engine, polished No. 76, a Baldwin 2-8-0, backed out immediately and the second section of the special was able to pull in on the same track five minutes later.

Twice a day, the Oahu operates a gasoline train into the city from a navy activity 20 miles out, for the "liberty" or "shore leave" of the personnel. There are two large gasoline cars, M-1 and M-2, built by the Oahu shops and powered with motors brought from the mainland. Each can pull three trailers, but to make this possible, roller bearings had to be installed in about eight trailer coaches, as friction bearings offered too much resistance.

The Oahu has steam power from American Locomotive and Baldwin, and two Shays (long stored) from Lima. The Oahu or the army and navy facilities which connect with it have power by Porter, Whitcomb, Plymouth, and General Electric, and Orton self-propelled railroad cranes act as locomotives in some instances on short runs; all these are in addition to the Alco, Baldwin and Lima steam locomotives. The government motive power is maintained in fine condition and includes both tank and standard-type steam as well as the gasoline and Diesel-electric prime movers.

Postwar Locomotives

TWO light Pacific locomotives, Nos. 1200 and 1201, have been built by the Canadian Pacific in the road's Angus Shops as the opening step in a postwar locomotive replacement program involving some 600 units. For the past 25 or 30 years almost all motive power built for American road service has been heavy, and older, lighter power has been reassigned to branch-line and local trains. The Canadian Pacific's step indicates that perhaps the time has arrived when the older light power is becoming obsolete and the branch lines are due for some modern power designed especially for them.

The design of these Pacifics, Class G-5, is based on the earlier Class G-2, but the engine has been modernized and lightened. The portion of the cab extending forward over the fire box has been eliminated and the cab upper structure has been made of [illegible] steam dome was omitted, following the recent trend. Engine trucks are fitted with roller bearings. Monel-metal staybolts are used experimentally where it was customary to use flexible staybolts in the past, and one locomotive is fitted with a complete installation of monel-metal staybolts on one side and standard steel staybolts on the other side.

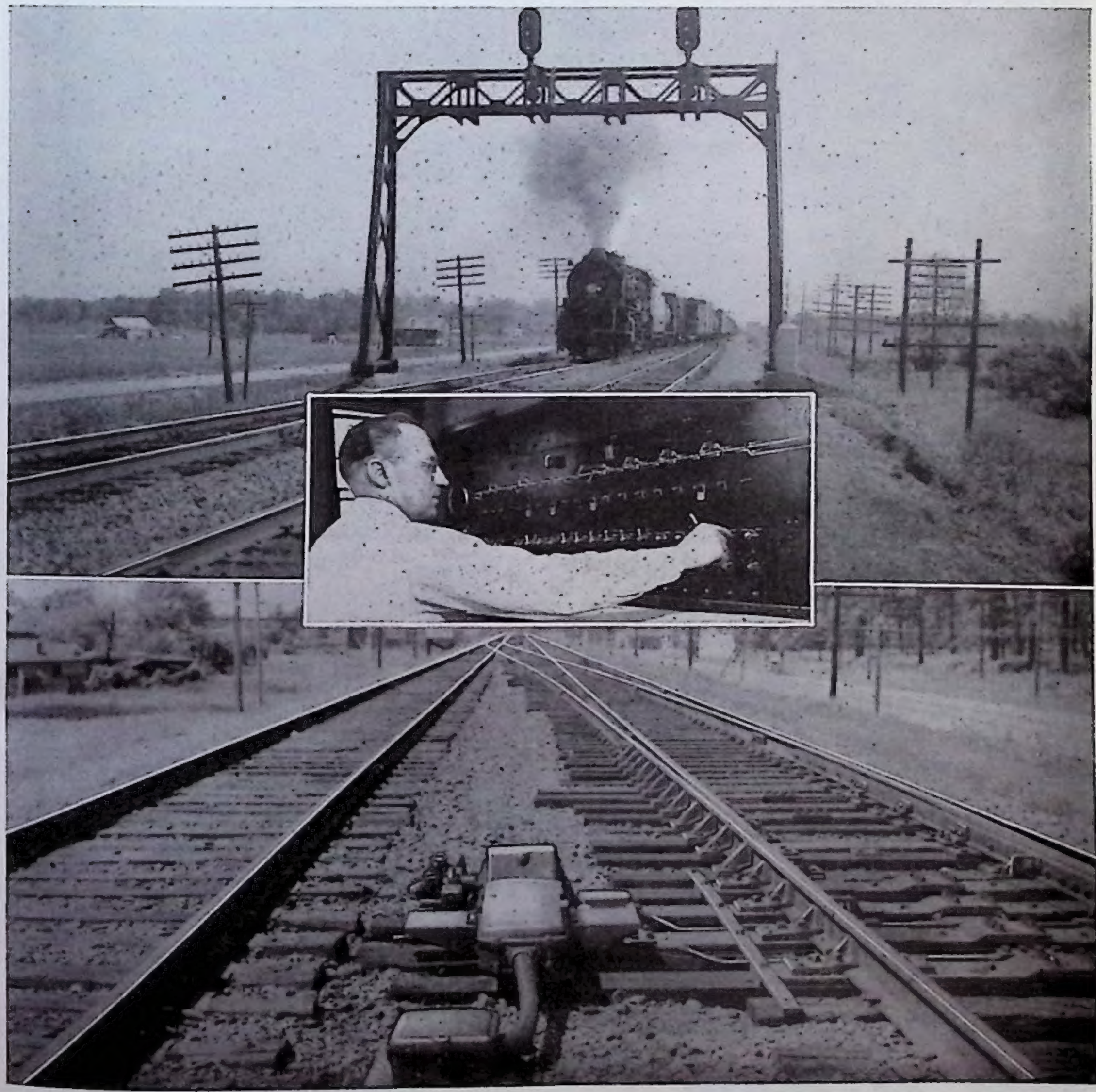
The weight distribution of the new G-5's is such that they can be used on most of the CP's branch lines. It is proposed that this design will eventually replace 495 of the D-10 class Ten-Wheelers, and 150 of the G-1 and G-2 class Pacifics, engines which were built in the early years of the century and which were originally used on mainline trains now hauled by heavy Pacifics.

The two light Pacifics described here are distinct from the heavy Pacifics being acquired from outside builders for freight service and described in TRAINS for January, 1944. Forty-five more of these freight Pacifics are now being built, along with 25 more new Mikados.

Specifications:

Road classification	G-5
Road numbers	1200-1201
Tractive effort, lbs.	34,000
Cylinder diameter and stroke, in.	20 x 28
Driver diameter, in.	70
Weight on leading truck, lbs.	39,800
Weight on drivers, lbs.	150,000
Weight on trailing truck, lbs.	41,200
Weight of engine, lbs.	231,000
Weight of tender loaded, lbs.	184,000
Steam pressure, lbs.	250
Grate area, sq. ft.	45.6
Evaporative heating surface, sq. ft.	2576
Superheating surface, sq. ft.	744
Tender capacity: Imperial gallons of water	8,000
Tons of coal	14

Missouri Pacific Lines Trains Operate Over Busy 414.5-Mile Route Without Written Train Orders



Except for an 80-mile double-track "bridge" protected by automatic block signals, the entire main line of the Missouri Pacific's Arkansas Division from Poplar Bluff, Mo., to Texarkana, Ark., is now under Centralized Traffic Control.

Recent completion of the final segment of CTC made possible the operation of trains without written orders all the way between Poplar Bluff and Longview, Tex. All train movements are governed by signal indication over this 414.5-mile route, which includes 90 miles of the Texas & Pacific Railway between Texarkana, Ark., and Longview, Tex., and is the world's longest stretch of railroad with train operations controlled entirely by signal indication.

Top photo above shows a fast freight rolling south at the end of double track at Clear Lake Junction, Ark., the engineer receiving instructions via signal from the operator, center, who mans the control board at Hope, Ark. Below is a typical power switch controlled in synchronism with signals. Lights on the condensed map at the operator's eye level denote the progress and position of all trains in the controlled area.

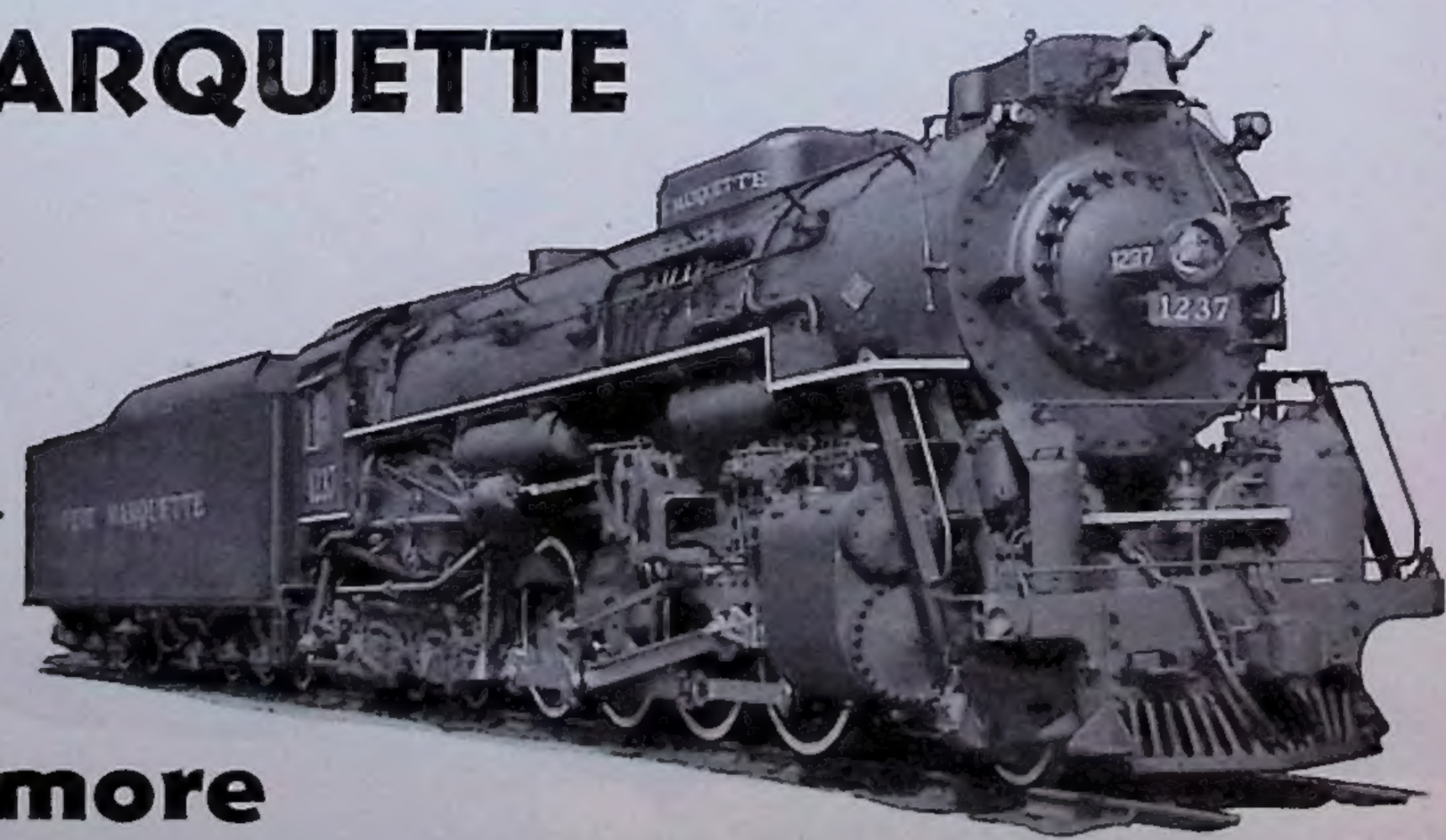
In effect, Centralized Traffic Control doubles the capacity of a single-track rail line and greatly speeds train operations. The saving in running time on the 324 miles of Missouri Pacific roadway between Texarkana and Poplar Bluff, for example, is estimated at approximately five hours per train, as a result of CTC installations and other recent roadway improvements.

[Advertisement.]

J. F. Corker, Camino, Calif.

Track gang at work Some years ago the Camino, Placerville & Lake Tahoe Railroad replaced a wooden trestle with a more permanent fill. The CP&LT is a standard-gauge line, running eight miles from Camino, Calif., to Placerville to connect the narrow-gauge Michigan-California Lumber Company railroad [March 1943 Trains] with the Southern Pacific.

PERE MARQUETTE



adds 12 more

TO ITS FLEET OF 2-8-4 LIMAS

To handle its heavy fast freight traffic, especially between Chicago and Detroit, the Pere Marquette put fif'een 2-8-4 Lima Locomotives in operation in 1937, twelve additional ones in 1941, and has now added twelve more; making a fleet of 39 of this type placed in service in the last seven years.

Of the latest twelve, five are equipped with Locomotive Boosters. These have a main cylinder tractive power of 69,350 pounds and a total tractive power of 83,450 pounds. They have 26" x 34" cylinders and 69" drivers.

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

Correspondence

The West Australia Government Railways have just turned out several streamlined Garratts, which is a bit of an anomaly, as they will never roll faster than 40 miles an hour. They have slick rounded-off tenders at each end and look very smart. They weigh some 117 tons, I believe. I've seen some of the darndest-looking engines ever from some of the obscure private lines in the Australian bush; some of these machines bear evidence of Jurassic or at least the Comanchean periods of the Mesazoic era. Geologists are busy reconstructing the fossilized remains of a set of Allen (or Gooch) valve gear thought to have reached that country before the seas receded, making it an island.

Courtland Christiani, Washington, D. C.

I have noticed one outstanding change since the Central of New Jersey became separated from the Reading. Most of the work trains used to have Camelbacks (usually an L-3s) but now have J-1s tank engines instead. This is true of trains going through Westfield, but they may be using different types of equipment elsewhere. Incidentally, shipyard trains to and from Port Newark are in many cases composed of old open cars and a 2-6-2T (J-1s). It almost makes one try violating the picture ban.

Ernest Anderson, Westfield, N. J.

An interesting article in the *Architects & Mechanical Journal* for 1859 reports on the construction of railroads through Egypt. Of special interest was the comment on the high fuel value of mummies and how they were bought by the cord for use in the locomotives.

H. B. Peterson, Chem. Div. Naval Research Laboratory, Washington, D. C.

I was greatly surprised at the lack of information on the use of cabooses as passenger and baggage cars in the article in the April issue. An outstanding example of this is found on the Western Pacific, a Class 1 road, which uses a caboose on one of its three daily passenger trains. The car is no larger than the company's other cabooses and has a cupola, but is equipped with an open platform at each end and is painted Pullman green. For the "accommodation" of passengers are four leather seats, evidently taken from an old coach. The baggage is taken care of in the front of the car. The train runs between Reno and Portola and is scheduled to leave Reno at 9 a. m., but little effort is exerted to make it leave before noon.

Charles Eaton, Oakland, Calif.

A word on your Trackage Rights quiz in the May issue: Answer 9 says the Wabash reaches Buffalo over the DL&W. Actual entry into the city is made via the CNR, which owns and operates the tracks used at the Black Rock (Buffalo) station, so passenger trains, when they ran 10 or 12 years ago, were already within the city before they ran onto DL&W iron. Wabash freights operate between Detroit and the Black Rock yards on CNR track, and cross the north and east sides of the city on Erie track to reach its East Buffalo freighthouse.

J. W. Brauner, 17 Spring St., Williamsville 21, N. Y.

Why is it that it takes from 15 to 42 minutes for passenger trains to cover the three or four miles between Council Bluffs, Ia., and Omaha, Neb.? Why do the same eastbound trains cover the distance in an average of 18 minutes?

F. C. Evans, DuPont Bldg., Wilmington, Del.

[On the westbound movements Omaha is the final terminal and some allowance is made in the schedules so that any time which may be lost en route may possibly be recovered to permit departing connecting trains to leave on schedule. Eastbound out of Omaha, trains are just starting, and whatever time may be lost in this district can readily be made up en route.—*Ed.*]

The Office Boy Has His Say

Yipe! The Old Man's out of town—on business, he says—and here's a half page to fill up, and Bob (that's our production superintendent) says the presses must get rolling. And I've got a lot of things on my mind which I've been wanting to unload for a considerable time. Why not?

For example: You write us lots of letters. Now, don't get me wrong; we like that. But here's where I take a beating: In the same letter you will have an order for books or a subscription to TRAINS and then considerable argument about something or other that we printed in the magazine, and maybe a question about advertising or about an order which some friend of yours sent us a couple of weeks ago. Well, because we try to get out your orders as quickly as possible, the letter goes to the order department and shipping department first. Even when we stick a red ticket on it which means RUSH AND I DON'T MEAN MAYBE it is several days before the rest of your letter gets taken care of. Then I get called into the Inner Sanctum, and boy, oh boy, do I get jumped on!

If you could just please put at least your orders on a separate piece of paper, you would get an answer a lot quicker and maybe I'd get a raise.

And here's another thing. This has been worked over before, but maybe I can make it clear. I know how you fellows feel when you miss an issue of TRAINS and can't get one for love nor money. Well, that doesn't have to happen. If you will just renew your subscriptions the very minute we tell you that it will expire in a couple of months—or renew even sooner if possible—you won't miss a copy. But if your subscription once expires, then oh boy but it's tough to get back on quickly. I know, because it's my job to "pull" your name when the time's up. And I don't dare miss one, because every ounce of paper counts—no kidding!

So please renew quickly, and where possible use one of the subscription blanks which we send in your copy of Trains. And then you won't have to worry about any other requests which you may get which I have inserted a couple of months in advance so you will renew promptly. This may not be as clear as I thought, but it is MOST IMPORTANT.

And you fellows overseas: I'm sorry, but I can't mail you the maps rolled in tubes for which you send us four bits extra and which I have to count out postage stamps to refund to you. You see, they are too big to go overseas in that shape. We can, however, send the folded maps without any permit from your commanding officer.

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